



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Donald K. Wright et al.

Examiners: Piazza Corcoran;

Gladys Josefina

Serial No.: 10/039,527

Art Group: 1733

Filing Date: November 7, 2001

Atty. Docket No.: 21276.01.9053

Confirmation No. 8833

Title: **APPARATUS AND METHOD FOR MANUFACTURING RECLOSABLE
BAGS UTILIZING ZIPPER MATERIAL**

Commissioner for Patents
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Carmen Camarena
Carmen Camarena

**PRIORITY CLAIM AND PETITION FOR THE EXTENSION OF THE
TIME PERIOD FOR MAKING A CLAIM FOR THE BENEFIT OF
AN EARLIER FILING DATE UNDER CFR §1.78(a)(2) AND (a)(5)**

Dear Sir:

Request For Benefit Of Earlier Filing Date

Applicants submit and respectfully request the acceptance of Applicants' Petition, under CFR §1.78(a)(2)(ii), for the extension of the time period for making a claim for the benefit of an earlier filing date. Specifically, Applicants request that the instant Application be granted the benefit of the filing date of the earlier filed provisional Patent Application No. 60/250,885, filed November 7, 2002, and U.S. Patent Application No. 09/415,696, filed October 12, 1999. In support of Applicants' request, Applicants have included the required information as set out in CFR §1.78(a)(3).

Amendment

Along with Applicants' request for the grant of its Petition, Applicants also request that the Application be amended as follows:

10/01/2004 AAD0F01 00000067 220259 10039527
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CHICAGO/#1271187.1

Please insert before the first paragraph the following new section title and paragraph:

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is based on and claims priority from U.S. Provisional Application Serial No. 60/250,885, filed November 7, 2000 and of co-pending U.S. application Serial No. 09/415,696, filed October 12, 1999, incorporated herein in its entirety by reference.

Required Information Under CFR §1.78(a)(3)

As required by CFR §1.78(a)(3), Applicants have submitted the following items:

(1) As Exhibit 1, Applicants have provided a copy of the now cross-referenced earlier filed Provisional Application No. 60/250,885;

(2) As Exhibit 2, Applicants have provided a copy of the now cross-referenced earlier filed Application No. 09/415,696; and

(3) As included below, Applicants have provided a statement that the entire delay between the date the claim was due under paragraph (a)(2)(ii) of this section, March 7, 2002, and the date the claim was filed September 24, 2004, was unintentional.

Statement Of Unintentional Delay

I, Robert S. Beiser, Applicants' attorney, am the sole Attorney of Record for the instant Application. On November 7, 2001, I filed such Application with the Patent and Trademark Office. Since the filing date I have been, and continue to be, responsible for the prosecution of the Application. As the sole Attorney of Record, I hereby attest that the entire delay, between the date the claim of priority was due under §1.78(a)(2)(ii), or March 7, 2002, and the date the current claim as embodied in this Petition was filed, or September 24, 2004, has been a delay that was entirely unintentional. By signing below, I further attest that I have made such statements based on personal knowledge of the facts surrounding the abandonment.

It should be noted in this regard that Applicants filed an Amendment on June 4, 2004 seeking to claim priority of the application No. 09/415,696, but inadvertently inserted Serial No. 10/039,527, the serial number of the present application.

Conclusion

Applicants, through their attorney representative, submit that Applicants are responsible for the unintentional delay in the filing of a claim for the benefit of an earlier filing date beyond the date the claim was due as defined under paragraph (a)(2)(ii) of this section. Applicants respectfully request the acceptance of the instant Petition and Applicants' supporting information, as required by CFR §1.78(a)(3), and respectfully request that the instant Application be granted the benefit of earlier filing date of the cross-referenced the earlier filed Application. Further, as noted above, Applicants request that the Application be amended to reflect the reference to the earlier filed Application.

The Commissioner is authorized to charge our Deposit Account No. 22-0259 for the current surcharge as specified in CFR § 1.17(t) and any additional fees or credit any overpayments.

Respectfully submitted,

By: Robert S. Beiser
Robert S. Beiser
Reg. No. 28,687

Date: September 24, 2004

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APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	DRAWINGS	TOT CLAIMS	IND CLAIMS
60/250,885	11/07/2000		150	21276-9053	13		

CONFIRMATION NO. 1897

FILING RECEIPT



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Michael, Best & Friedrich LLP
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Date Mailed: 07/01/2002

DOCKETING
MILWAUKEE, WI

Receipt is acknowledged of this provisional Patent Application. It will not be examined for patentability and will become abandoned not later than twelve months after its filing date. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Filing Receipt Corrections, facsimile number 703-746-9195. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

Applicant(s)

Donald K. Wright, Murphysboro, IL;
Christopher L. Pemberton, Marion, IL;
James K. Hankins, Carterville, IL;

If Required, Foreign Filing License Granted 06/28/2002

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

Title

Apparatus and method for manufacturing reclosable bags utilizing zipper tape material

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

MAY - 5 2003

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This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

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NOT GRANTED

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***Provisional Application for United
States Letters Patent***

Joint Inventors

TO ALL WHOM IT MAY CONCERN:

Be it known that we, Donald K. Wright, Christopher L. Pemberton, and James K. Hankins, citizens of the United States, residing at, respectively, 3750 Viola Lane, Murphysboro, Illinois 62966; 909 North Market Street, Marion, Illinois 62959; and 602 West Illinois Avenue, Carterville, Illinois 62918, have invented a new and useful "Apparatus and Method for Manufacturing Bags Utilizing Zipper Tape Material" of which the following is a specification.

*Apparatus and Method for Manufacturing Reclosable Bags
Utilizing Zipper Tape Material*

BACKGROUND OF THE INVENTION

This application is a continuation-in-part of United States Patent Application Serial No. 09/415,696, filed October 12, 1999. That application discloses and claims, among other things, a method and apparatus for manufacturing zipper tape which is splotch sealed at regular intervals and wound on rolls for later dispensing on a bag making and/or form fill seal machine. The entire contents of that application are incorporated by reference herein.

This invention generally relates to zipper tape used in reclosable plastic bags, an apparatus and method related to zipper tape for manufacturing reclosable bags that is more efficient and economical than conventional methods and devices, and in particular to a method of making a bag having an airtight zipper profile on the inside of the bag with a perforation above the zipper profile to provide easy access to the bag after opening the perforation.

The popularity of reclosable zipper fasteners has created a demand for a large number and wide variety of reclosable bag sizes and types. It is commonly known in the art to form a reclosable bag through the addition of a zipper profile to a pair of bag walls in order to form a bag with a reclosable, airtight seal. Transverse application of such zipper profiles to the web is also known. In many reclosable bag applications, an airtight

seal is necessary to maintain the freshness of articles placed in the bag. However, presently available reclosable bags do not provide or maintain an airtight seal due to either leakage from the end of the zipper strips, leakage through the seals of the strips to the film or leakage through the interlocked fastener profiles on the zipper strips themselves. Further, such seals must be suitable for high-speed automated production in order to make the production of reclosable bags commercially viable.

In the case of zipper profiles, commonly known methods of construction and seal formation often cause inaccurate, commercially unacceptable seals which cannot be produced on an economically practical scale. Commonly known profile formation methods in the art require multiple sealing devices, precise machinery or extensive retooling to alter the size and type of reclosable fastener. Exemplary devices are shown and described in United States Patent Nos. 5,601,368 (Bodolay), 3,847,711 (Howard), 5,461,845 (Yeager), 5,823,933 (Yeager), 4,424,865 (Ferrell), 4,335,817 (Bahr), 4,909,017 (McMahon), and 5,024,537 (Tilman). As such, none of the devices referenced above satisfy the need for a multi-purpose reclosable zipper profile which can be accurately and economically advanced laterally over a web of plastic material and sealed in an airtight manner to the web with a perforation in the web over the zipper tape to open the bag.

The fastener strip material as described in the McMahon U.S. Patent No. 4,909,017, the McMahon '017 patent, has the drawback that it cannot be

delivered as described therein, since it is a strip only and cannot be carried on an air current. A particular problem with the McMahon '017 technique is that one obtains a natural curled thin strip fastener prior to sealing thereof to bag walls that ultimately makes the fastener unstable, and irregularly shaped. In addition to the problem of sealing the backside of this unstable, irregular-shaped strip fastener to the bag wall(s), there is the problem of keeping the material from naturally curling after sealing of one portions thereof to a bag wall, making it even more difficult to get a uniform seal on the backside of the fastener strip.

The fastener assembly, as shown in the McMahon '017 patent, has the additional problem of being discontinued at the fold of the bag. Practically all baggers now use drive belts on the side of the product filling tube. Extending the fastener strip to the bag folds does not allow the proper use of drive belts, since the ends of the fastener strip periodically ride under the drive belt surface. Proper tracking cannot be accomplished. The McMahon '017 patent does not indicate that the ends of the fastener are sealed together.

The McMahon '017 patent also relies upon the ability to make a pressure bar seal that seals the outer bag material precisely to the backside of the fastener profile. Yet, it has been discovered that a pressure bar seal requires a stable and flat surface to properly seal. The irregular shape of the fastener profile makes this impossible. One requires heat, dwell time, and pressure to effect a commercially

acceptable seal and due to the irregular shape of the profile, it is impossible to get enough stable pressure to accomplish a commercially acceptable seal. The surface moves and gives unpredictably. If enough heat, pressure and dwell is applied to mash the shape flat enough to seal, the profile lock is softened and deformed, making it impossible to repeatedly use the completed bag for opening and reclosing.

The McMahon '017 patent also has a shortcoming related to sealing the back, seamed side of the bag to the opposite side of the fastener. Based on Applicant's knowledge and experience, this cannot be done to produce a commercially acceptable product. The fact that no bagger can draw with the accuracy the McMahon '017 patent requires, to place the second seal, in register, on the back side of the fastener profiles, is a major shortcoming.

Another illustrative patent is U.S. Patent No. 5,461,845 to Yeager, the Yeager '249 patent. Yeager discloses transverse application of a patch zipper on the front wall of the bag. However one shortcoming of Yeager relates to the requirement of opening the package from the front panel thereof. If the package is to be opened from the front panel, a cut or perforation must be made before the fastener is applied. This cut, or perforation, is generally shaped like an "oval" with opening "tabs" for gaining access to the fastener. Since the fastener, most likely, is not closed at the ends of the fastener, the possibility of contamination exists.

The most expedient and economical way to make the package is to create the cut, or perforation, in one operation, just upstream of the fastener strip application. This operation, in its simplest form, will leave openings for potential contamination to pass through the cut or perforated, front panel opening. To overcome this contamination potential, users of this method add a great deal more cost and complexity to create a sealed, sealable "patch", or some other means of eliminating this contamination risk. The same problem occurs, if the package must be hermetically sealed.

U.S. Patent No. 5776045, Bodolay, discloses a machine for attaching a reclosable fastener to a web of flexible material primarily intended for use with a host packaging machine to form a reclosable container. The fastener attaching machine includes a motor that indexes the flexible material along a path through the fastener attaching machine. A cutting device disposed along the path forms a cut through a predetermined segment of the flexible material. A fastener supply means provides reclosable fasteners having distal ends and a predetermined length to an endless belt that conveys each fastener to a fusing means that respectively melts and cools the distal ends of each fastener. The endless belt then conveys the fused fastener to a sealing means that seals the reclosable fastener in overlying relation to the cut formed in the flexible web of material. However, it has been found that difficulties may arise in maintaining the fasteners in register with the cuts formed in the web.

Thus, there exists a need to solve the problems in the art articulated above.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the invention generally to overcome the shortcomings of the prior art concerning sealing of plastic zipper tape to a web of plastic film, and in particular to provide an apparatus which repeatedly perforates the web, advances sections of the zipper tape under the web and seals the sections of the tape to the web 110 with high throughput and with low cycle times. In addition an apparatus is provided for manufacturing easy open bags or pouches which are air tight, for use in such applications as snack food and fresh vegetables.

The zipper tape is preferably constructed of polyethylene, and may have additives such as ethylene vinyl acetate for easy sealing. The web is also preferably constructed of polyethylene, but may be constructed of other commonly known films such as polypropylene or polyethylene terephthalate(Saran®), so long as a sealing layer compatible with polyethylene is provided.

Zipper tape is provided on a roll, and includes a continuous supply of a first profile strip having at least one rib extending therefrom; a continuous supply of a second profile strip opposite the first profile strip; the second profile strip including at least two ribs that extend from the surface of the second strip; and a series of splotch seal portions fusing at desired lengths the first profile strip, the second profile strip and the ribs. The zipper tape is indexed at an indexing station, via a servomotor. The servomotor has

control over acceleration, speed and deceleration of the zipper tape. The zipper tape is wound through a series of dancer rollers on an arm, which allows the zipper tape to be dispensed at the desired tension. The zipper tape is then fed into a feeding mechanism. The feeding mechanism utilizes an optical sensor to detect the presence of the splotch seal portions of the zipper tape, which are thinner than the remainder of the zipper tape. These splotch seal portions thus act as eye marks to indicate the position of the tape. Similarly, a series of eye marks is printed along one edge of web, which is detected by a second optical sensor. The web is advanced by using a series of drive rollers, driven by a second servomotor. The speed of the drive rollers is coordinated with the servomotor by a computer, so that a desired portion of zipper tape is advanced beneath web to the desired position on the platform on the elevator.

In a preferred embodiment, the elevator has a platform which is rectangular in shape. The elevator is contained within a hollow Lexan® pedestal which has an open central portion. At the top of the pedestal is a rectangular ledge. The top surface of the ledge serves as an anvil for the perforation of web by a pneumatically controlled perforation knife.

A pneumatically controlled perforation knife and a pneumatically controlled sealing head are mounted on a block, which in turn is slidably mounted on a shaft. The web of film extends over the elevator and the ledge. In a first position, the perforation knife is positioned above the top portion of the ledge. The ledge is

stationary. When an air cylinder is actuated, the perforation knife descends downwardly so that the knife, having a series of teeth thereon, perforates the web and strike the top of the ledge. The air cylinder then retracts perforation knife. The Block 280 is then driven horizontally by the air cylinder until the sealing head is positioned above the platform. In a preferred embodiment, the sealing head and perforation knife may be combined so that perforation of web and sealing of a section of the zipper tape may be accomplished simultaneously. In addition, the requirement for reciprocating motion of the block is thereby also eliminated.

In the meantime, during perforation of the web, the zipper tape has been advanced into the feeding mechanism. An optical sensor has detected one of the splotch seal portions of the zipper tape, which is thinner than the remainder of the zipper tape because of the splotch seal. The optical sensor then signals a pair of belt tracks, which utilize a belt drive to advance a desired length of zipper tape over the platform. A guillotine knife is then actuated to cut midway through the splotch seal portion, until it advances past a lower blade. Both the operation of the belt drive and the guillotine knife can be sequenced using pneumatic as those manufactured by Allen Bradley. A section of zipper tape is thereby positioned over and deposited onto the platform of the elevator.

Following the deposit of a section of zipper tape onto the platform, and after perforation of the web, the elevator is driven upwardly by a shaft until the platform is

in contact with the web. The sealing head, which is usually Teflon® coated, is then either heated to the desired sealing temperature, or is maintained at the desired sealing temperature until enough heat is passed through the web to seal the peripheral portions or flanges of the section of the zipper tape to the web. This seal is also air tight due to the construction of the zipper tape, which has thickened flanges, which melts and fills any gaps during sealing. The zipper tape is also airtight through the zipper portions due to the unique construction of the zippers themselves, as disclosed in parent U.S. Patent Application Serial No. 09/415,696, filed October 12, 1999, incorporated by reference herein, and attached hereto.

The apparatus further coordinates the tape applicator with a bagger, in order to maintain uniform web tension, and thereby web tracking. As mentioned above, the zipper tape is threaded through dancer rollers which are mounted on an arm. A photo sensor reads the position of the dancer arm and, when the arm has descended to a desired position, advances the zipper tape, using a nip drive.

The web is also mounted on a roller. The web is pulled from its original roller through a series of dancer rollers mounted on an arm, by a series of drive rollers. When additional web material is pulled through the rollers, the upstream dancer arm rises causing coil springs to stretch, under tension. When the arm reaches a preset point, the drive rollers are deactivated. In addition, the tape applicator is activated causing it to advance and index zipper tape. The coil springs

under tension pull the arm down to receive the zipper tape being indexed into the three loop dancer roller assembly. The process is then continually repeated.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front perspective view of a one embodiment of the apparatus of the present invention for sealing zipper tape to a web of flexible film;

FIG. 2 is a partial front perspective view of the apparatus of the present invention showing in particular a pneumatically actuated elevator for placing the zipper tape of the present invention against the web;

FIG. 3 is a partial front perspective view of the apparatus of the present invention showing in particular the pneumatically actuated elevator of FIG. 2 having an opening in the center thereof for reception of a perforation die from above the web;

FIG. 4 is a top perspective view of a the sealing head and perforation die of the present invention positioned above the web of FIG. 3, with the sealing head moved to one side and the perforation die positioned over the elevator;

FIG. 5 is a top perspective view of a the sealing head and perforation die of the present invention positioned above the web of FIG. 3, with the sealing head over the elevator and the perforation die moved to one side;

FIG. 6 is a side perspective view of the apparatus of the present invention;

FIG. 6A is a front plan view of the apparatus of FIG. 1;

FIG. 6B is a front perspective view of a computer used to control the apparatus of FIG. 1;

FIG. 7 is a front plan view of the bag of the present invention.;

FIG. 8 is a side cutaway view of the bag of FIG. 7;

FIG. 9 is a front perspective view of the zipper tape of the present invention showing in particular fastener profiles on first and second fastener strips;

FIG. 10 is a front perspective view of the zipper tape of FIG. 9 showing in particular a series of interconnected zipper tape sections with splotch seals between each section;

FIG. 11 is a front perspective view of a zipper tape application device applying zipper tape to a web of film which is subsequently wound on a winder for later use in a bagging machine.

DETAILED DESCRIPTION OF THE INVENTION

The present invention concerns sealing of zipper tape 100 to web 110. As shown in FIG. 1, an apparatus 120 is provided which is capable of repeatedly performing the steps necessary to perforate the web 110 and seal tape 100 to the web 110 with high throughput and with low cycle times. The manner in which zipper tape 100 is fed, and positioned for sealing onto base web 110 is critical in order to achieve repeatability. In addition an apparatus 120 is provided for manufacturing easy open bags 112 or pouches which are air tight, for use in such applications as snack food and

fresh vegetables. Zipper tape is preferably constructed of polyethylene, and may have additives such as ethylene vinyl acetate for easy sealing. Web 110 is also preferably constructed of polyethylene, but may be constructed of other commonly known films such as polypropylene or polyethylene terephthalate(Saran®), so long as a sealing layer compatible with polyethylene is provided.

As shown in Fig. 6, a roll 130 of zipper tape 100 is provided. As shown in Fig. 9, Zipper tape 100 includes a continuous supply of a first profile strip 100a, including at least one rib 100B that extends from the surface of the first profile strip 100A; a continuous supply of a second profile strip 100C opposite the first profile strip 100A, the second profile strip 100C including at least two ribs 100 D and 100E that extend from the surface of the second strip 100C. A series of splotch seal portions 100F. Fuses at desired lengths of the first profile strip 100A, the second profile strip 100B and the ribs 100D and 100E of the first profile strip 100A and the second profile strip 100B as shown in Fig. 10.

Zipper tape 100 is indexed at indexing station 132, via a servomotor 140. Servomotor 140 has control over acceleration, speed and deceleration of the zipper tape 100 as best seen in Fig. 1. Zipper tape 100 is wound through a series of dancer rollers 150 on an arm 160, which allows the zipper tape 100 to be dispensed at the desired tension. Zipper tape 100 is then fed into feeding mechanism 170 as best seen in Figs. 1 and 3. Feeding mechanism 170 utilizes an optical sensor 180, as best seen

in Fig. 6, to detect the presence of the splotch seal portions 100F (Fig. 10), which are thinner than the remainder of the zipper tape 100. These splotch seal portions thus act as eye marks to indicate the position of the tape 100. Similarly, a series of eye marks is printed along one edge of web 100, which is detected by a second optical sensor 190. Web 110 is advanced by using a series of drive rollers 200, driven by a second servomotor 210. The speed of drive rollers 200 is coordinated with servo motor 140 by a computer 220, shown in Fig. 6B, so that a desired portion of zipper tape 100 is advanced beneath web 110 to the desired position on elevator 230, (Figs. 2 and 3).

As shown in Fig. 3, in a preferred embodiment, elevator 230 has a platform 240 which is rectangular in shape. Elevator 240 is contained within a hollow Lexan®, pedestal 242 having an open central portion 244. At the top 246 of pedestal 242 is a pair of rectangular ledges 248 and 249. The top surface 250 of ledges 248 and 249 serve as an anvil for the perforation of web 100 by a pneumatically controlled perforation knife 260, as may be understood by viewing Fig. 4.

Fig. 4 shows pneumatically controlled perforation knife 260 and a pneumatically controlled sealing head 270. Both are mounted on block 280, which in turn is slidably mounted on a shaft 290. Web 110 extends over ledges 248 and 249. In the first position, perforation knife 260 is positioned above the top portion 250 of ledges 248 and 249. Ledges 248 and 249 are stationary. When air cylinder 300 is actuated, perforation knife 260 descends downwardly so that the knife 260, having a

series of teeth 310 thereon, perforates web 110 between ledges 248 and 249. The air cylinder 300 then retracts perforation knife 260. Block 280 is then driven horizontally by air cylinder 320 until sealing head 270 is positioned above platform 240. In a preferred embodiment, sealing head 270 and perforation knife 270 may be combined so that perforation of web 110 and sealing of portion 290 of zipper tape 100 may be accomplished simultaneously. In addition, the requirement for reciprocating motion of block 280 is thereby also eliminated.

In the meantime, during perforation of web 110, zipper tape 100 has been advanced into feeding mechanism 170. Optical sensor 180 has detected one of the splotch seal portions 100F of zipper tape 100, which is thinner than the remainder of the zipper tape because of the splotch seal. Optical sensor 180 then signals belt tracks 340 and 350, which utilize a belt drive 360 to advance a desired length of zipper tape 100 over platform 240. Guillotine knife 370 is then actuated to cut midway through the splotch seal portion 100F, until it advances past lower blade 380. Both the operation of belt drive 360 and guillotine knife 370 can be sequenced using pneumatic control systems such as those sold by Matrix Technologies, or utilizing a computer control system such as those manufactured by Allen Bradley. The optical sensor 180 utilizes a piezo-electric bridge 390 to convert the change in opacity of the zipper tape 100 at the thinned portions, (splotch seals 100F), to an electrical signal to zipper tape servo motor 400 to advance zipper tape 100 a desired length. Guillotine knife 370,

driven by yet another servomotor 410, is then signaled to descend and cut portion 390 of zipper tape 100. Section 390 of zipper tape 100 is positioned over and thereby deposited onto platform 240.

Following the deposit of section 390 of zipper tape 100 on platform 240, and after perforation of web 110, elevator 230 is driven upwardly by shaft 400 until platform 240 is in contact with web 110. Sealing head 270, which is usually Teflon® coated, is then either heated to the desired sealing temperature, or is maintained at the desired sealing temperature until enough heat is passed through web 110 to seal the peripheral portions 420 of section 290 of zipper tape 100 to web 110 (as seen in Fig. 10). This seal is also air tight due to the construction of zipper tape 100, which has thickened flanges 100G, which melt and fill any gaps during sealing. Section 290 of zipper tape 100 is also airtight through the zipper portions due to the unique construction of the zippers themselves, as disclosed in parent U.S. Patent Application Serial No. 09/415,696, filed October 12, 1999, incorporated by reference herein, and attached hereto.

The invention further coordinates bagger 510 (Fig. 6) and tape applicator 520. It is important to coordinate the operations of bagger 510 and the operations of tape applicator 520 in order to maintain uniform web tension, and thereby web tracking.

As partially illustrated in FIG. 1, dancer rollers 150 are mounted on arm 160. A photo sensor 162 reads the position of the dancer arm 160 and, when the arm has descended to a desired position 164, advances zipper tape 100, using a nip drive 166.

Web 110 is mounted on a roller 530. As web 110 is pulled through a series of dancer rollers 540 (Fig. 3) mounted on arm 560, drive rollers 570 (Fig. 6A) pull web 110 therethrough. When additional web material 110 is pulled through the rollers 570, the upstream dancer arm 520 rises causing coils 522 in springs 524 to stretch, under tension. When the arm 520 reaches a preset point, drive rollers 570 are deactivated. In addition, tape applicator 520 is activated causing tape applicator 520 to index. The coils under tension pull the arm 520 down to receive the material being indexed into the three loop dancer roller 540 assembly. The process is then continually repeated.

Another aspect of the invention provides for attachment of tape applicator 520 to a winder 580. Web 110 may have zipper tape portions 290 applied thereto at bag length intervals. This allows bagger 510 to function with web 110 having pre-applied zipper tape portions 290 thereon. There exists substantial demand for zippered roll stock 590 with tape 100 already sealed onto a base web to be run on separate baggers. Alternatively, tape applicator 520 can be retrofit onto existing baggers or form fill seal machines, such as those manufactured by Hayssen and Hudson Sharp. This approach

to zippered packaging is not a replacement for in-line capability, but can be used as another option.

While only a few, preferred embodiments of the invention have been described hereinabove, those of ordinary skill in the art will recognize that the embodiment may be modified and altered without departing from the central spirit and scope of the invention. Thus, the preferred embodiment described hereinabove is to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims, rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are intended to be embraced herein.

CLAIMS

1. A method of making a reclosable plastic bag comprising: feeding a zipper tape having at least one splotched portion thereof across an optical sensor, detecting said splotched portion to obtain a signal, and actuating a cutter for cutting said zipper tape in response to said signal.
2. The method of claim 1 in which said cutter comprises a knife.
3. The method of claim 1 further comprising feeding said zipper tape across dancer rollers prior to said detecting step.
4. The method of claim 1 in which said step of detecting comprises determining a thickness of said splotched portion.
5. The method of claim 4 in which said step of determining comprises comparing said thickness to reference predetermined thickness.
6. The method of claim 5 in which said reference predetermined thickness comprises a thickness of a web onto which said splotched zipper tape is sealed.
7. The method of claim 1 further comprising forming a bag body.
8. The method of claim 7 further comprising filling said bag body.
9. The method of claim 1 further comprising creating bags using a form, fill and seal machine.
10. The method of claim 1 further comprising splotching said zipper tape multiple times.

11. The method of claim 1 further comprising perforating a web, and sealing said zipper tape to said web thereafter.
12. A machine for making reclosable plastic bags comprising a stationary hollow pedestal with a top ledge, an elevator within said pedestal having a platform for receiving and positioning a section of zipper tape, a sealing head positioned above a web for compressing against and heating said web and a periphery of said zipper tape thereby sealing said periphery of said zipper tape to said web.
13. The machine of claim 12 in which said sealing head is positioned to seal said zipper tape to an underside of said web.
14. The machine of claim 12 further comprising a perforating knife positioned above said web for perforating said web, said perforating knife optionally contacting said top ledge upon actuation thereof.
15. The machine of claim 12 in which said perforating knife is positioned to perforate said web prior to said zipper tape being sealed to said web with a seal.
16. The machine of claim 15 in which said seal is substantially airtight or substantially watertight.
17. The machine of claim 12 further comprising reclosable bag forming components.

18. The machine of claim 12 further comprising a form, fill and seal machine.

ABSTRACT OF THE DISCLOSURE

The present invention includes a method, apparatus, and system for dispensing sections of zipper tape having profiled reclosable fasteners thereon onto one side of a web of plastic film at bag length intervals, and sealed thereto, with a perforation through the film over the zipper tape. The zipper tape itself is constructed so as to be airtight. As a result, when the film with the zipper tape sections transversely sealed thereon are formed into reclosable bags, the bags are both easy to open and airtight. The zipper tape is provided having a series of airtight splotch seals at desired lengths. The zipper tape is dispensed through a feeding mechanism and guillotine knife onto a platform, which detects the splotch seals and cuts the zipper tape into sections of the desired length. The platform is mounted on an elevator contained within a hollow stationary pedestal. The pedestal has a ledge at its top which serves as an anvil for perforating the web. On the opposite side of the web are a perforation knife and a sealing head. The perforation knife and sealing head can either reciprocate back and forth so as to move into position above the zipper tape section on the platform, or can be integrated with the perforation knife formed as an oval inside the sealing head or outside the sealing head. The film may be either perforated, then sealed or vice versa. The resulting film having flanged fastener profiled tape thereon may then be used in either a conventional bagger or a vertical form, fill and seal bagging machine.



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164
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100
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FIG. 1

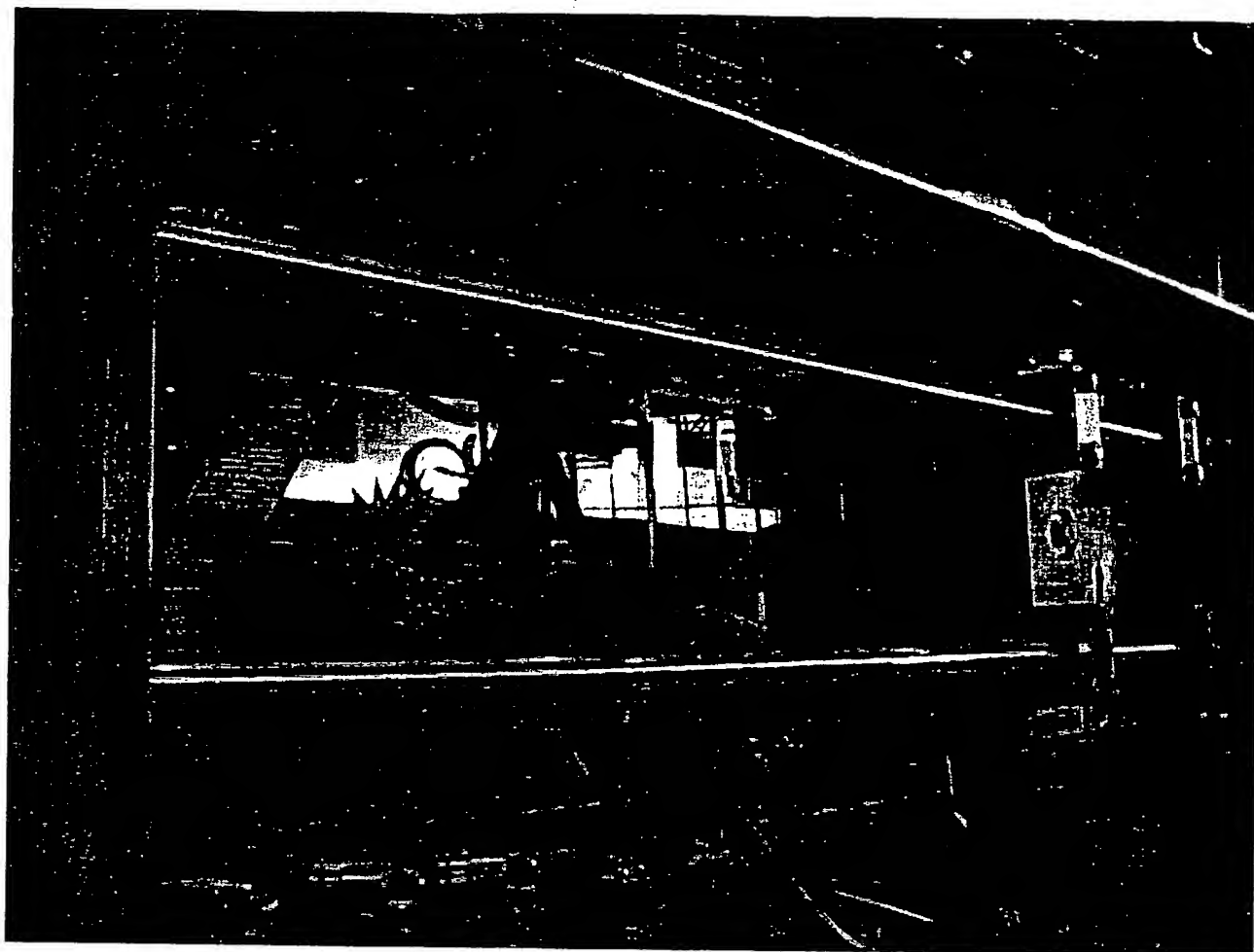
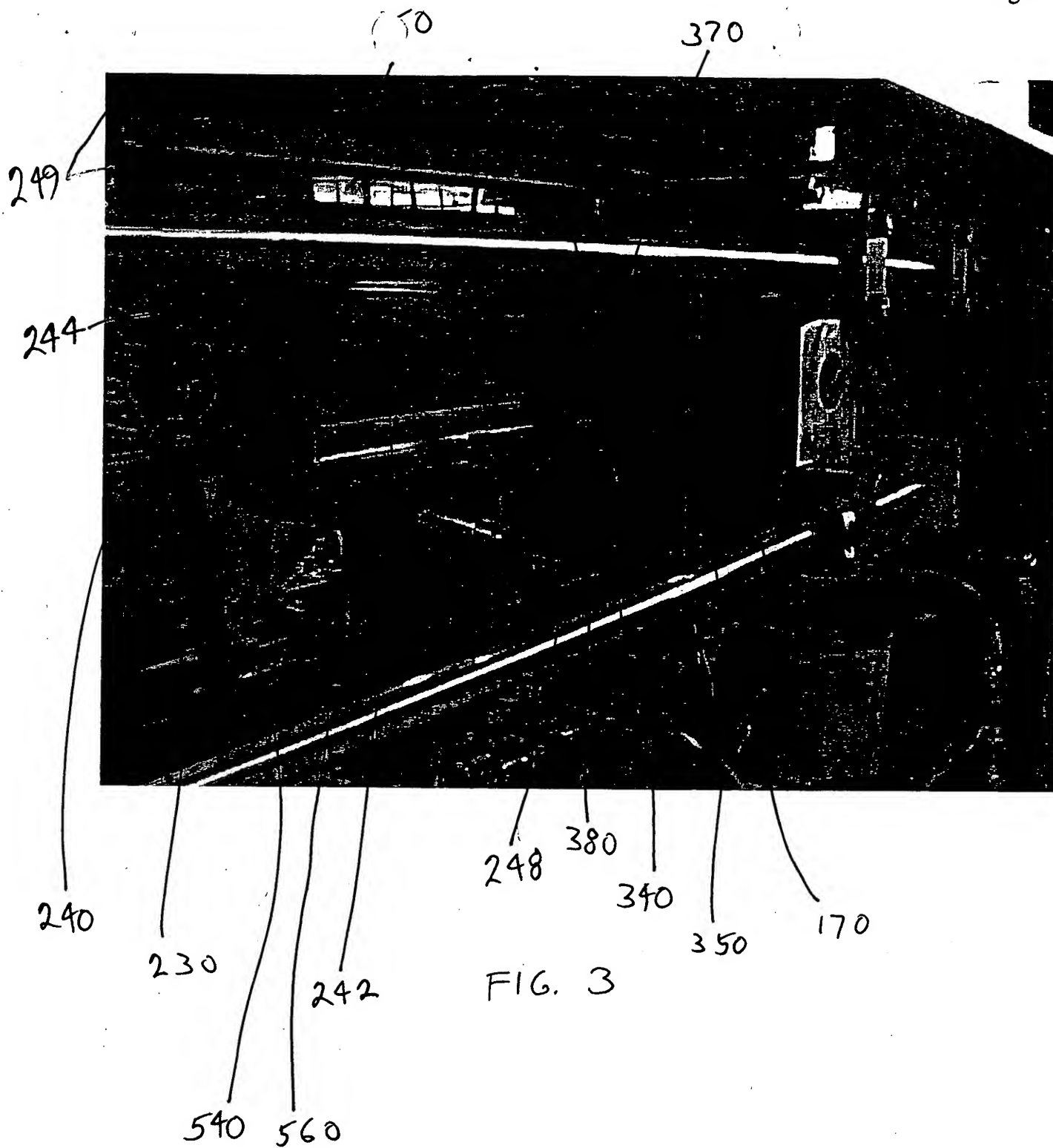
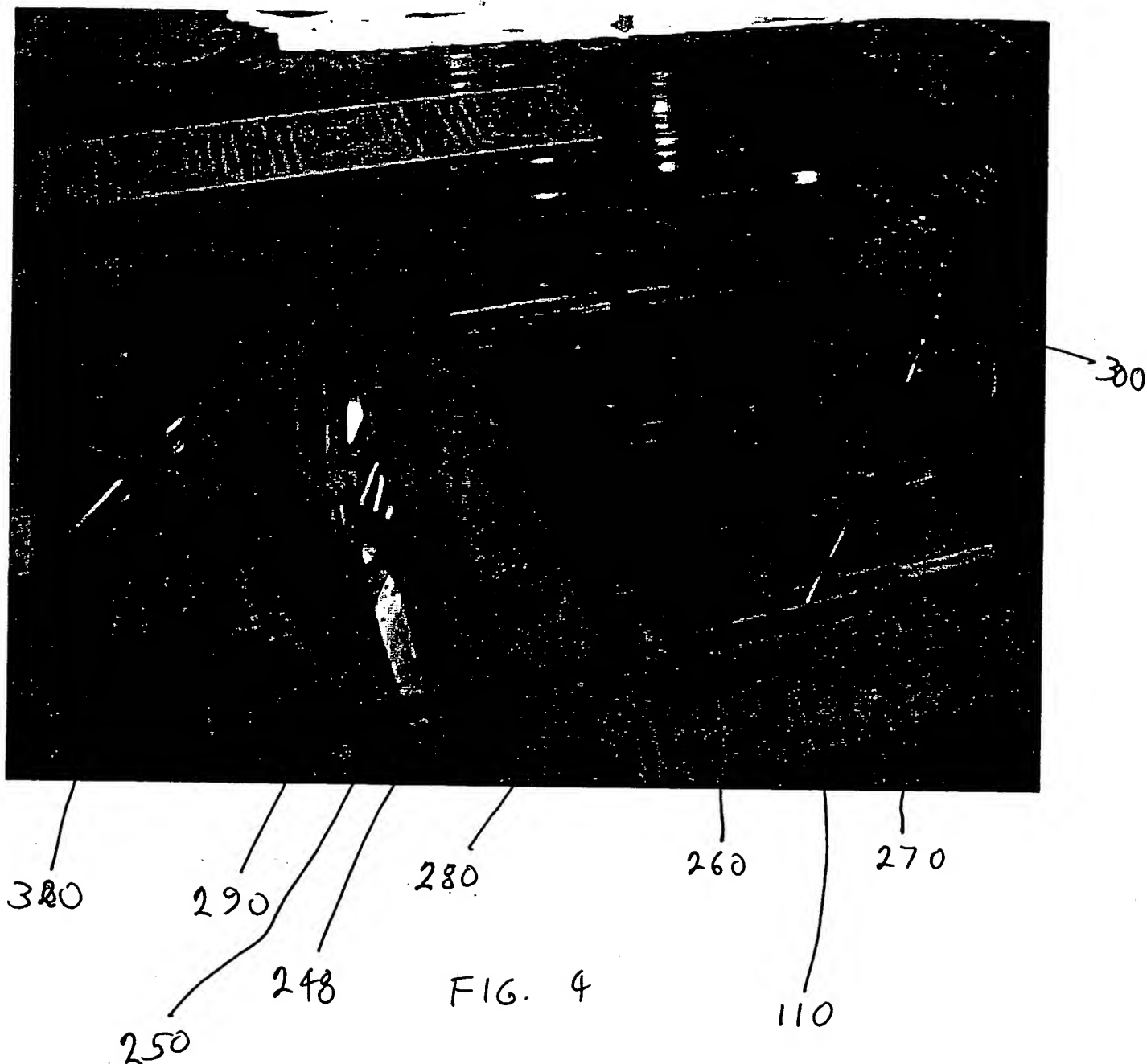


FIG. 2





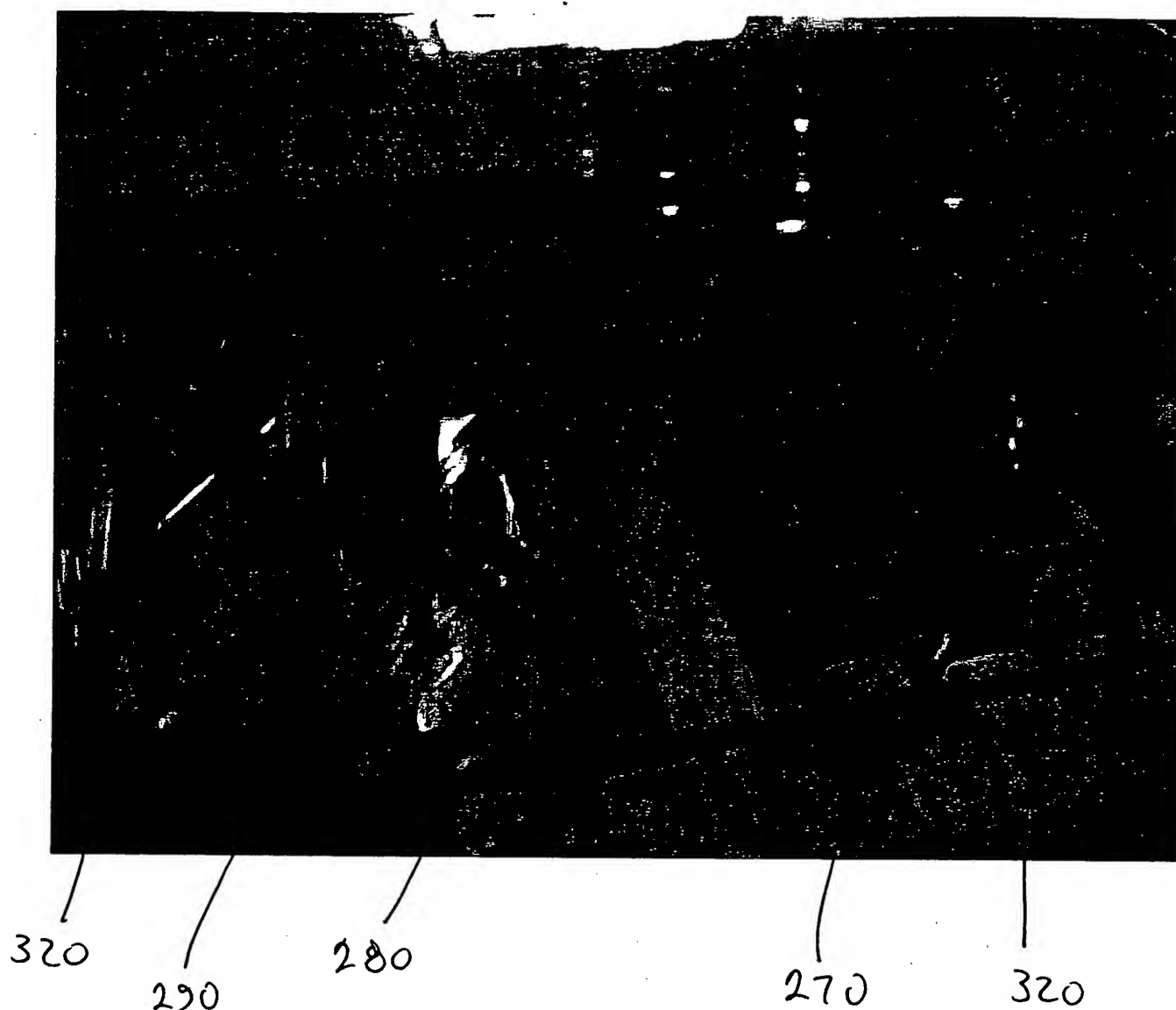
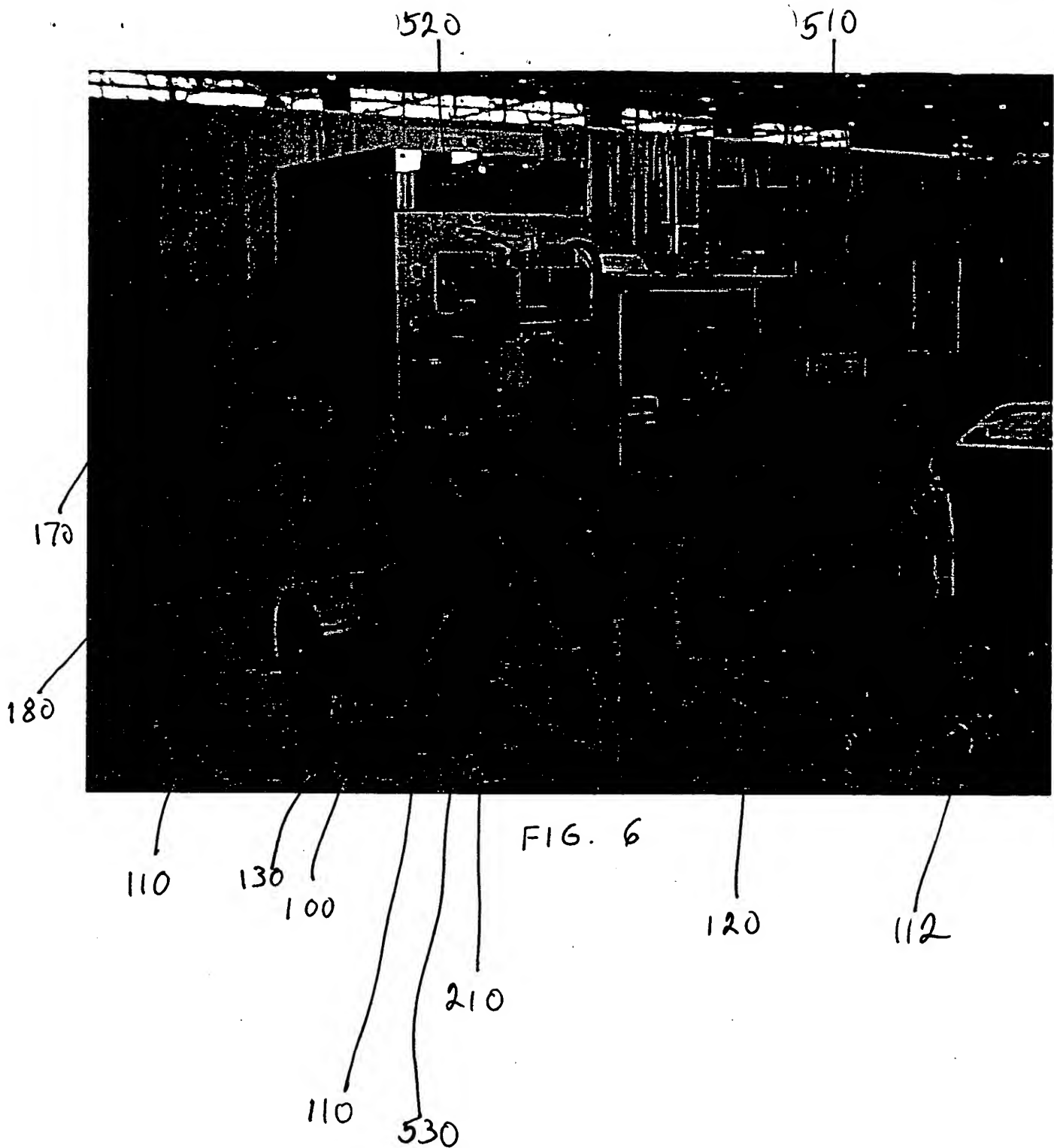
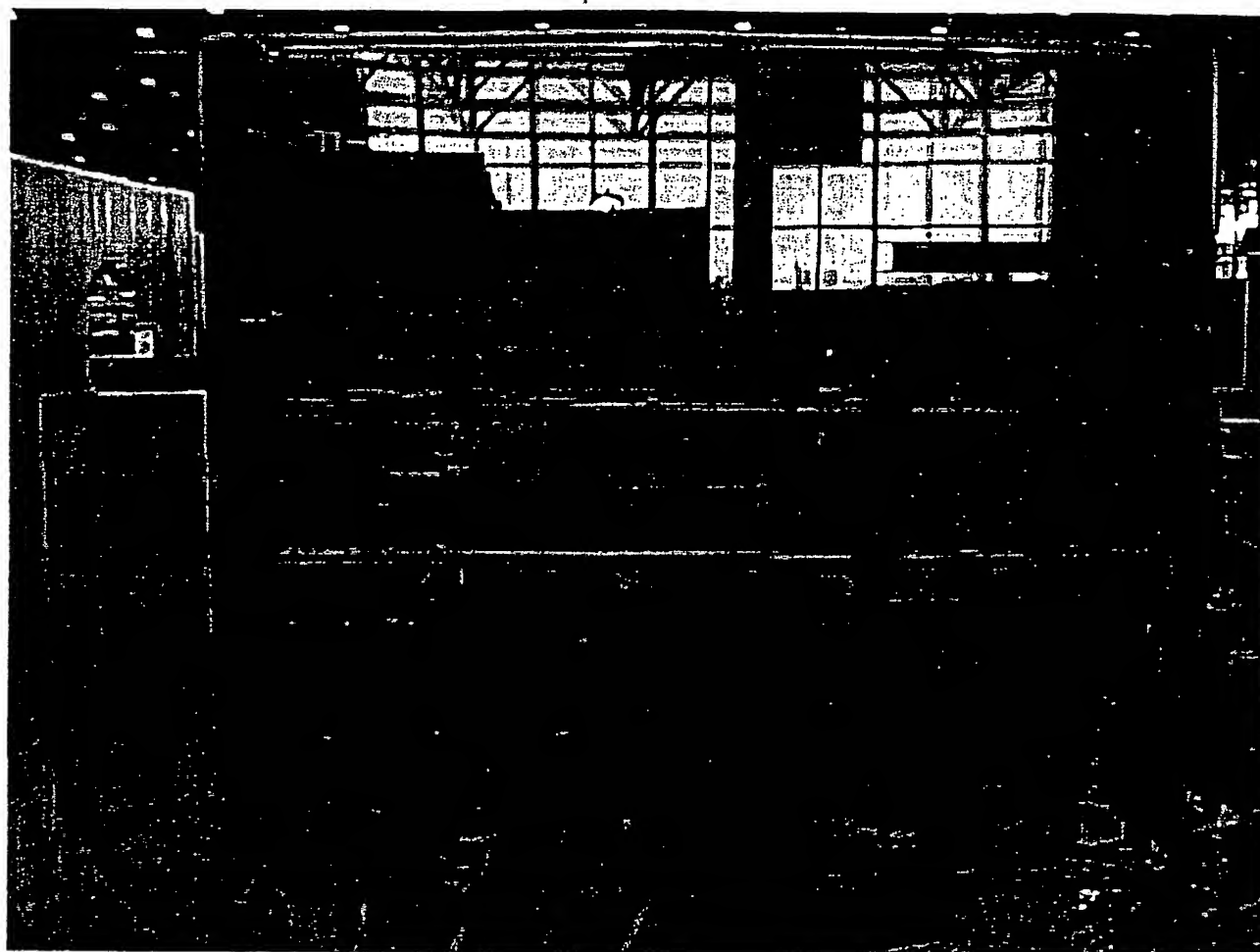


FIG. 5





570

200

FIG. 6A

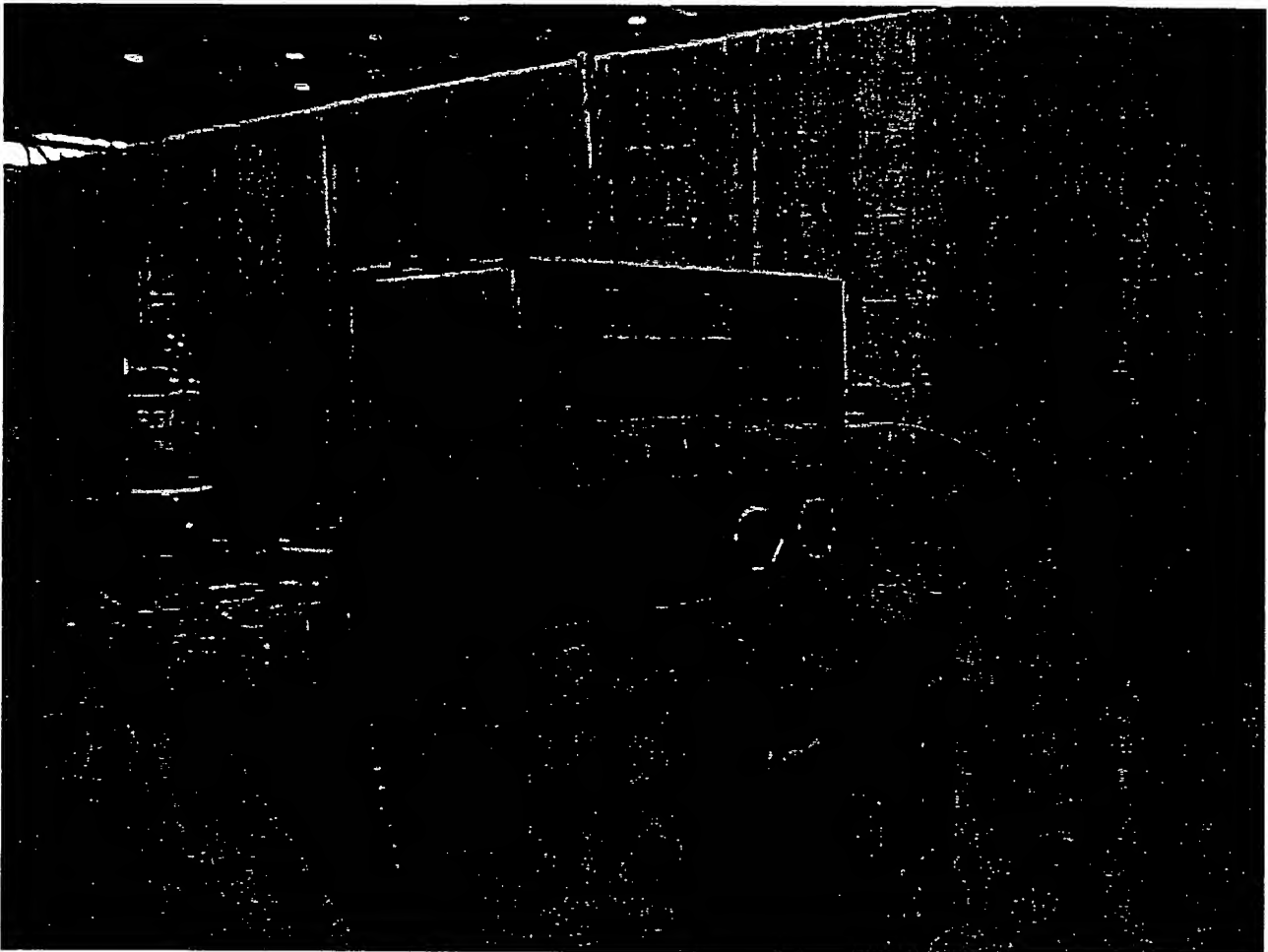


FIG. 6B

200

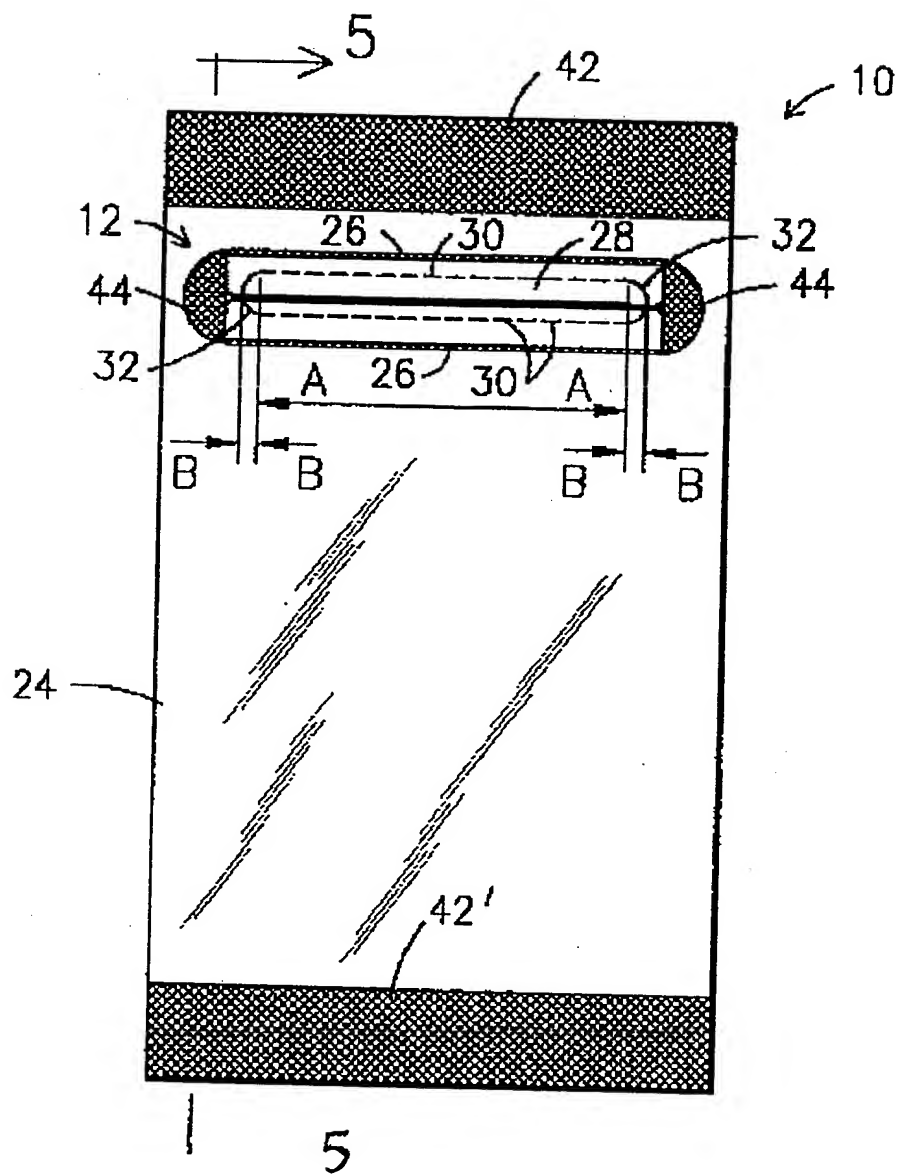


FIG. 7

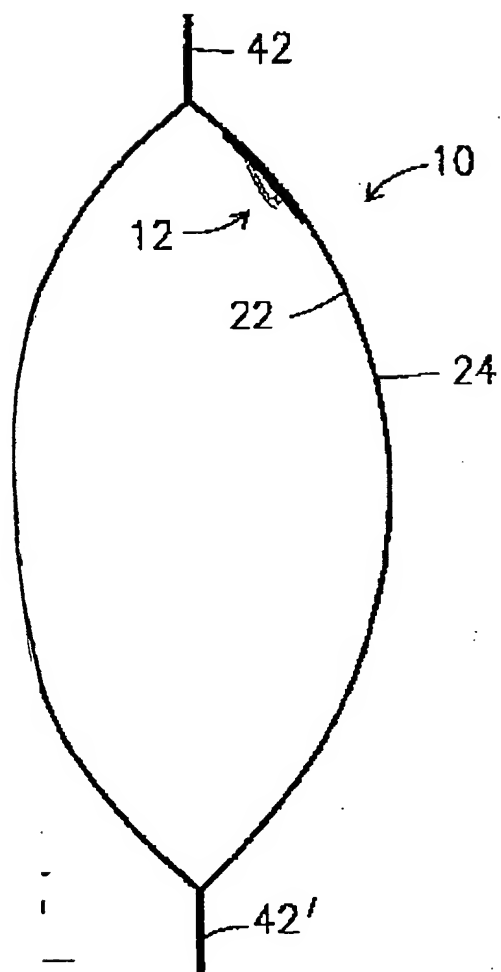


FIG. 8

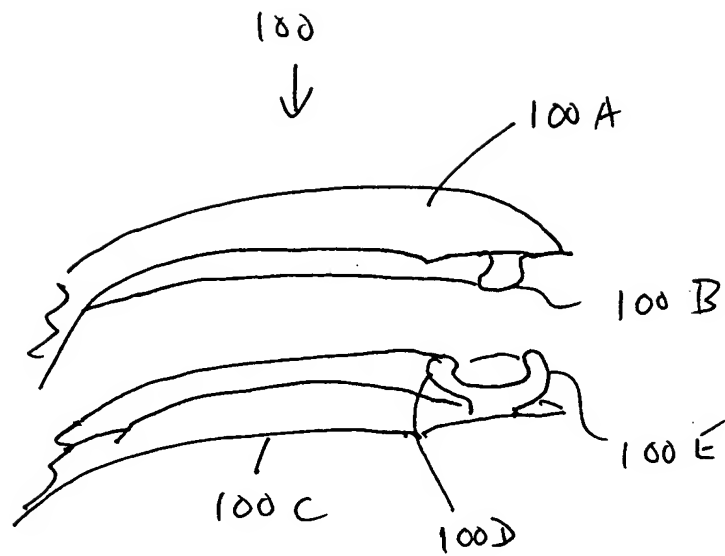


FIG. 9

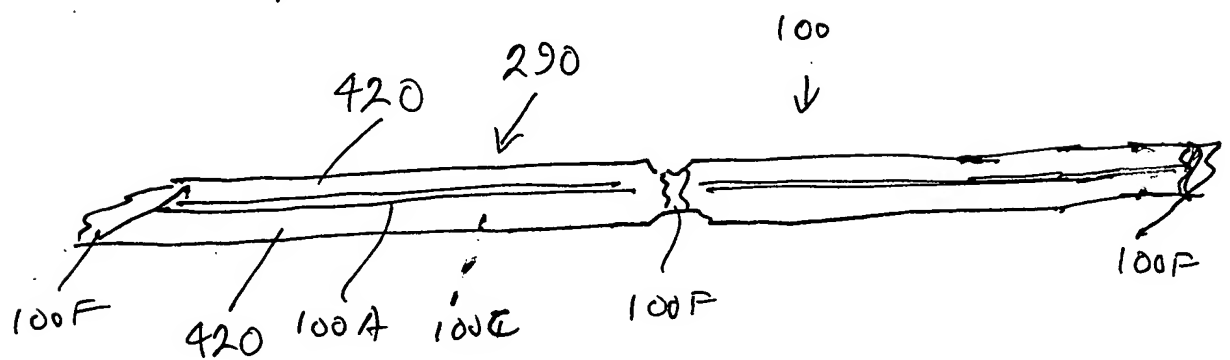
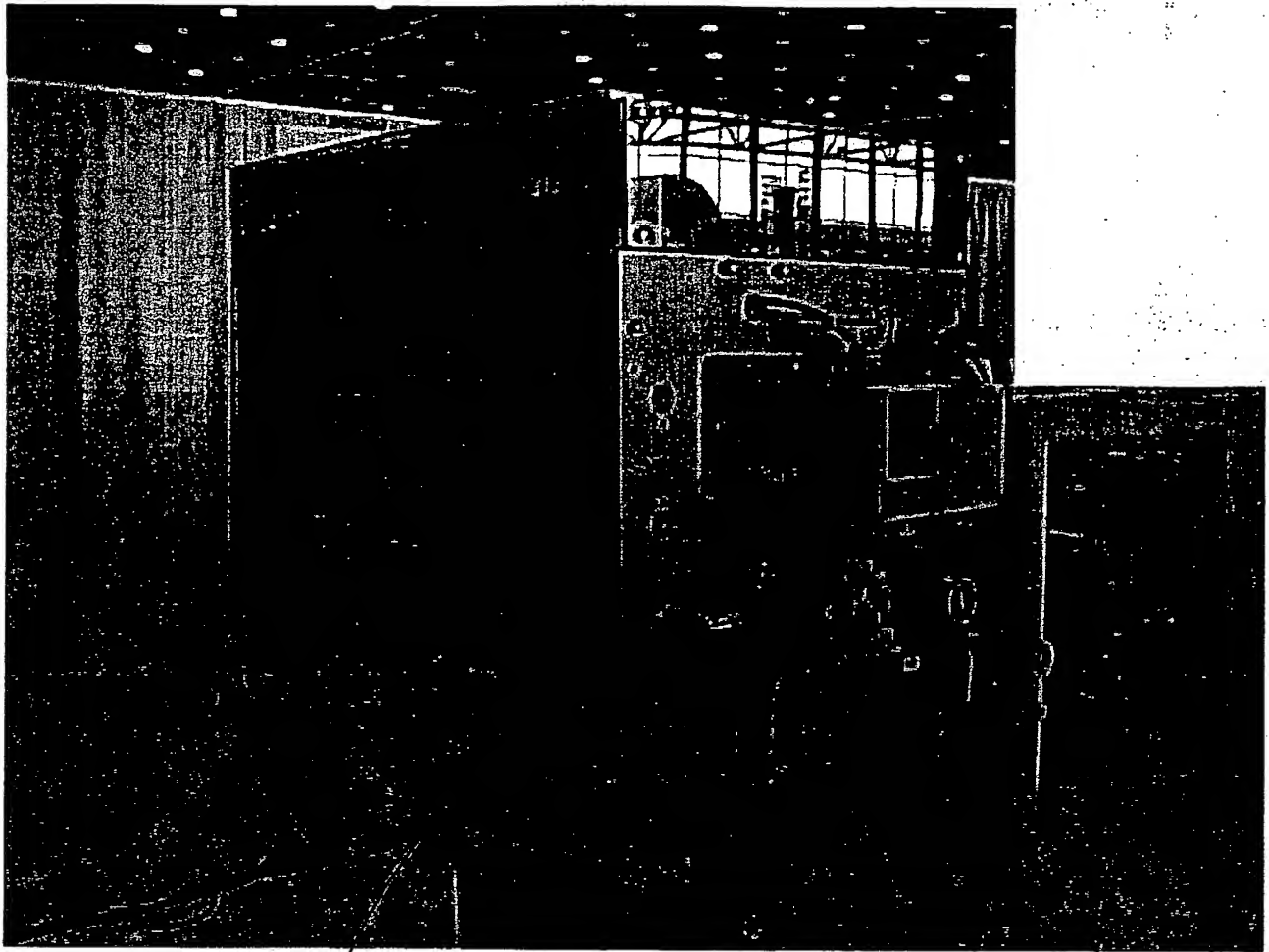


FIG. 10



520

FIG. 11

580

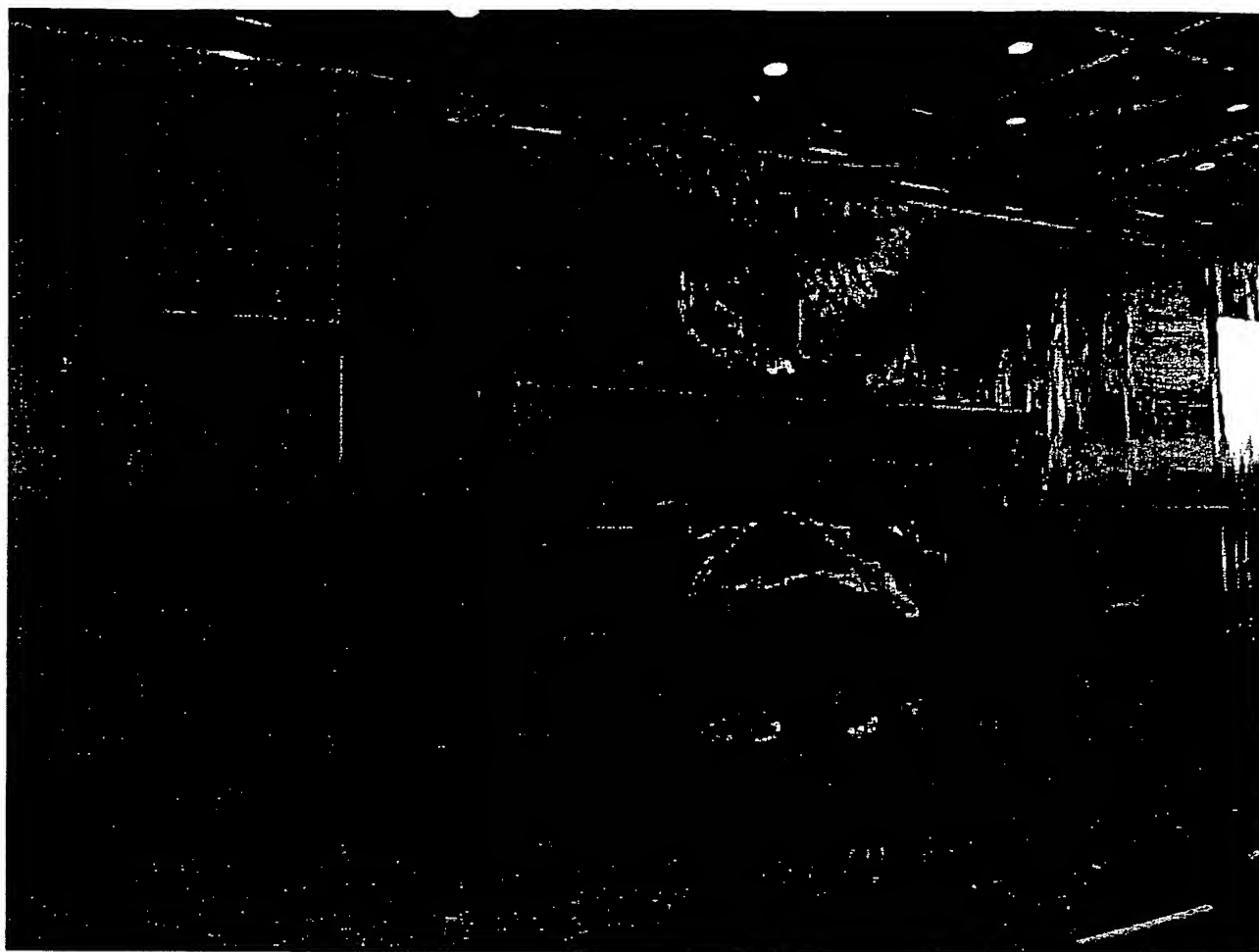


FIG 11A

590

290

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FILING DATE: 10/12/1999
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<p align="center">UTILITY PATENT APPLICATION TRANSMITTAL</p> <p><i>(Only for new nonprovisional applications under 37 CFR 1.53(b))</i></p>	Attorney Docket No.	21276-9044
	First Named Inventor	
	Donald K. Wright et al.	
	<p>U.S. Postal Service Express Mail Label No. EM468907721US. I, Kathleen F. Rutz, hereby certify that this paper or fee is being deposited with the United States Postal Service as Express Mail on the date of my signature and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.</p> <p><i>Kathleen F. Rutz</i></p> <p>Date of Deposit: October 12, 1999</p>	

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EM468907721US

Sir:

Enclosed for filing is a complete patent application, entitled "RECLOSABLE FASTENER PROFILE SEAL AND METHOD OF FORMING A FASTENER PROFILE ASSEMBLY" and invented by Donald K. Wright, Christopher L. Pemberton, and James K. Hankins, including the following documents:

Specification including Claims - 15 pages
 Abstract of the Disclosure
 Drawings - 7 sheets
 Return Receipt Postcard
 Declaration, Power of Attorney - 2 pages
 Verified Statement (Declaration) Claiming Small Entity Status - Independent Inventor
 Verified Statement (Declaration) Claiming Small Entity Status - Small Business Concern
 Check for \$506.00 for filing fee

The filing fee has been calculated as shown below.

	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) BASIC FEE \$380.00
TOTAL CLAIMS		21 - 20 =	1	X \$9.00	= 9.00
INDEPENDENT CLAIMS		5 - 3 =	2	X \$39.00	= 117.00
TOTAL FILING FEE - - -					506.00

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Respectfully submitted,

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Date: October 12, 1999

cc: Docketing
 Wkg Atty. APS - Resp Atty. RSB
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APPLICATION FOR UNITED STATES LETTERS PATENT

JOINT INVENTORS

TO ALL WHOM IT MAY CONCERN:

Be it known that we, Donald K. Wright, a U.S. citizen, residing at 3750 Viola Lane, Murphysboro, Illinois 62966; Christopher L. Pemberton, a U.S. citizen, residing at 909 N. Market Street, Marion, Illinois 62959; and James K. Hankins, a U.S. citizen, residing at 602 W. Illinois Avenue, Carterville, Illinois 62918, have invented a new and useful **“RECLOSABLE FASTENER PROFILE SEAL AND METHOD OF FORMING A FASTENER PROFILE ASSEMBLY”**, of which the following is a specification.

RECLOSABLE FASTENER PROFILE SEAL AND METHOD OF FORMING A FASTENER PROFILE ASSEMBLY

BACKGROUND OF THE INVENTION

5 The invention relates generally to reclosable fasteners and a method of forming a
reclosable fastener profile assembly which allows for fast, automated production and
accurate seal registration. In particular, the invention relates to a seal arrangement for a
reclosable zipper profile strip which is created through the application of heat and
pressure to a male and female profile to form a 'compression molded segment' seal, and
10 to a method of producing such a seal.

 The popularity of reclosable zipper fasteners has created a demand for a large
number and wide variety of reclosable bag sizes and types. It is commonly known in the
art to form a reclosable bag through the addition of a zipper profile to a pair of bag walls
in order to form a bag with a reclosable, airtight seal. However, improper registration
15 may cause the seal to weaken and fail over time or become permeable to the air. In many
reclosable bag applications, an airtight seal is necessary to maintain the freshness of
articles placed in the bag. Further, such seals must be suitable for high-speed automated
production in order to make the production of reclosable bags commercially viable.

 In the case of zipper profiles, commonly known methods of construction and seal
20 formation often cause inaccurate, commercially unacceptable seals which cannot be
produced on an economically practical scale. Commonly known profile formation
methods in the art require multiple sealing devices, precise machinery or extensive
retooling to alter the size and type of reclosable fastener. Exemplary devices are shown
and described in United States Patent Nos. 5,601,368 (Bodolay); 3,847,711 (Howard);

5,461,845 (Yeager); 5,823,933 (Yeager); 4,241,865 (Ferrell); 4,335,817 (Bahr); 4,909,017 (McMahon); and 5,024,537 (Tilman). As such, none of the devices referenced above satisfy the need for a multi-purpose reclosable zipper profile which can be accurately and economically manufactured.

5 Therefore, an unfulfilled need remains for a zipper profile which can be accurately manufactured at a high rate of speed and which can be adapted to a wide range of reclosable zipper bag applications.

SUMMARY OF THE INVENTION

The present invention provides a reclosable fastener profile seal and a disclosed
 10 method of forming a fastener profile assembly. In particular, the preferred embodiment of the method of forming a fastener assembly includes a first profile strip, a second profile strip and a compression molded segment seal [fusing the first and second profiles together to provide a reclosable faster having fused ends] which form the opening for a reclosable bag. To manufacture the assembly, the first profile strip and second profile
 15 strip are fed by at least one motorized roller from a web or roll of respective profile strips. Interlocking ribs are included on the profiles to create an airtight reclosable seal which is suitable for a wide range of applications. The first and second profile strips are engaged to form a reclosable profile assembly. After the first and second profiles are interconnected, a portion of the first and second profile ⁽⁵⁾ are sealed together. The
 20 interconnected first profile and second profiles are advanced and staggered applications of a compression molded segment seal are applied to the end portions of each profile assembly. This allows the profile assembly to be formed at a high rate with good

accuracy. While being fused, the first and second profiles are cut to provide for individual reclosable fasteners.

In an alternative embodiment, the individual reclosable fastener profiles are not cut, thereby providing a continuous linear strip of fully formed reclosable bag profiles. In such an embodiment, the completed reclosable fasteners may be wound onto a roll for later separation and addition to bag walls.

It is a principal advantage of the invention to provide a reclosable fastener profile seal and method of forming a fastener profile assembly that can be produced quickly and precisely to form a zipper profile suitable for use in a wide range of reclosable bag applications.

It is another advantage of the invention to provide reclosable profile assembly and method of forming a reclosable fastener profile assembly which is easily adjustable to provide a reclosable fastener profile of any commercially desirous length.

It is another advantage of the present invention to provide a reclosable profile assembly and method of forming a reclosable fastener profile assembly which is readily adaptable to seal and form reclosable fasteners and profiles of various sizes and styles.

It is yet another advantage of the invention to provide reclosable profile assembly which is suitable for attachment to a wide range of bag wall sizes and types.

Various other features and advantages of the invention are set forth in the following detailed description, drawings and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevational view of a portion of the profile assembly embodying the invention including the compression molded segment seal.

FIG. 2 is a front elevational view of a portion of the first profile and second profile prior to engagement and fusion.

FIG. 3 is a side elevational view of the first profile of FIGS. 1 and 2.

FIG. 4 is a side elevational view of the second profile of FIGS. 1 and 2.

5 FIG. 5 is a perspective view of the first and second profiles including the sealing apparatus that forms the compression molded segment seal and a single compression molded segment seal.

FIG. 6 is a perspective view of the first and second profiles including the compression molded segment seal formed in FIG. 5 and the formation of a second
10 compression molded segment seal.

FIG. 7 is a front elevational view of a reclosable bag including the profile seal disclosed in Figs. 1 through 6.

FIG. 8 is a perspective view of a reclosable bag including the profile seal disclosed in Figs. 1 through 6.

15 FIG. 9 is a flowchart of the method of forming a reclosable fastener profile assembly disclosed in Figs. 1 through 6.

FIG. 10 is a flowchart of an alternative method of forming a reclosable fastener profile assembly also disclosed in Figs. 1 through 6.

While the specification and claims herein may refer to specific fastener or rib
20 structures, it will be understood and fully appreciated that the principles of the present invention refer to closures generally and incorporate any compatible closure type or style. As such, before one embodiment of the invention is explained in detail, it is to be understood that the invention is not limited in its application to the details of the

construction and the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced or being carried out in various ways. Also, it is to be understood that the phraseology and terminology used herein is for the purpose of description and should not be regarded as limiting.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

As seen in FIGS. 1 through 4, the reclosable profile assembly 10 as disclosed in the present embodiment includes a first profile 14, a second profile 18 and a compression molded segment seal 22. The profile assembly 10 has a length which may be reduced or enlarged in accordance with the present application to accommodate any length required by a particular industry application.

The profile assembly 10 includes a first profile 14. The first profile 14 is flat, thin piece of packaging material preferably manufactured from polyethylene. As most clearly depicted in FIGS. 1, 2, 3 and 4, the first profile 14 includes a first profile surface 26 including an end 28, a first rib 30, second rib 34 and third rib 38. The first rib 30, second rib 34 and third rib 38 are in a location offset from the center of the first profile 14, thereby defining a profile adherence surface 42 between ribs 30, 34, 38 and the edge 44 of the first profile strip 14. As seen in FIGS. 1 through 4, the first rib 30, second rib 34 and third rib 38 of the first profile 14 extend the entire length of the first profile surface 26.

The second profile 18 is preferably manufactured from the same material and with the same dimensions as the first profile 14. As best depicted in FIG. 2, the second profile

18 includes a second profile surface 46 including an end 48, first rib 50, second rib 54 and third rib 58. As best depicted in FIG. 4, the first rib 30, second rib 34 and third rib 38 are located along one edge 40 of the second profile 18. As seen in FIGS. 1 through 4, the first rib 30, second rib 34 and third rib 38 of the second profile 18 extend the entire length
5 of the second profile surface 46.

As seen in FIG. 1, the completed profile assembly 10 also includes a compression molded segment seal 22 portion. The compression molded segment seal 22 comprises the profile adherence surface 42 of the first profile surface 26 fused to the portion of the second profile surface 46 which engages the profile adherence surface 42 and a portion of
10 the first 30, second 34 and third 38 ribs of the first profile surface 14 and the corresponding engaged portion of the first 50, second 54 and third ribs 58 of the second profile surface 46. In the embodiment depicted, the compression molded segment seal 22 portion has a thickness less than the combined thickness of the individual first profile 14 and second profile 18.

15 The formation of the profile assembly 10 and compression molded segment seal 22, as depicted in FIGS. 5 and 6, is accomplished by providing a continuous supply of an interconnected first profile 14 and second profile 18 where the ribs 30, 34, 38 of the first profile 14 are engaged with the ribs 50, 54, 58 of the second profile 18.

As seen in FIG. 5, the engaged first profile 14 and second profile 18 are fed or
20 otherwise positioned in proximity to the compression molded segment sealer 62. The compression molded segment sealer 62 provides heat and pressure to the profile assembly 10 to form the compression molded segment seal 22.

As seen in FIG. 6, the engaged first profile 14 and second profile 18 are repositioned 82 with the first compression molded segment seal 22 advanced 82 past the compression molded segment sealer 62. The second compression molded segment seal 24 is formed, defining the second compression molded segment seal 24 of the completed profile assembly 70 and the first seal 22 of a second incomplete profile assembly 78. While the second compression molded segment seal 24 is being formed, the first profile 14 and second profile 18 are simultaneously cut 60 by the compression molded segment sealer 62 to define the completed profile assembly 70 and form a portion of the first compression molded segment seal 22 for a second incomplete profile 78. The area between the first compression molded segment seal 22 and second compression molded segment seal 24 defines the opening 80 of the reclosable bag profile 70 (as seen in FIG. 8). The second incomplete profile 78 depicted in FIG. 4 is advanced 82 and the process (as depicted in FIGS. 9 and 10) is repeated to form an additional completed profile assembly 70 (as shown in FIGS. 7 and 8).

As seen in FIGS. 7 and 8, a reclosable storage bag 84 is created by fusing or otherwise affixing a completed profile assembly 70 to a first bag wall 72 and second bag wall 74. The completed reclosable storage bag 84 includes a first bag wall 72, a second bag wall 74 and the reclosable fastener profile assembly 70 depicted in FIG. 6. As depicted in FIGS. 8, the reclosable fastener profile 10 and first 72 and second bag walls 74 combine to define a storage bag 84 with a reclosable opening 80.

FIGS. 9 and 10 represent graphically the method of forming a fastener profile assembly 70 disclosed herein. As seen in FIG. 9, the following steps are performed in sequence: first 82, an interconnected profile strip 10 is provided; second 84, heat and

pressure is applied by the compression molded segment sealer 62 to the interconnected profile strip 10 to form a compression molded segment seal 22; and third 86, the profile strip 10 is advanced 82. The second 84 and third 86 steps are then repeated to form additional completed profile assemblies 70.

5 Alternatively, as seen in FIG. 10, the steps 82, 84, 84 depicted in FIG. 9 are duplicated, however, a cutting step 88 is applied after the interconnected first 14 and second 18 profiles are fused 22 during the second step 84. The cutting step 88 cuts 60 the compression molded segment seal 22, thereby defining a second compression molded segment seal 24. The second step 82, cutting step 88 and third step 86 are then repeated
10 sequentially to form additional individual profile assemblies 70.

 In other embodiments (not shown), the reclosable profile assembly 10 may include a peel seal, a frangible seal or other means for detecting tampering. Such means may include any type of known frangible seal which, when broken, is easily detected by the user.

15 Various features and advantages of the invention are set forth in the following claims.

Claims

We claim:

1. A reclosable fastener profile assembly, said assembly comprising:
a continuous supply of a first profile strip including at least one rib that extends
5 from the surface of said first strip;
a continuous supply of a second profile strip opposite said first strip said second
strip including at least two ribs that extend from the surface of said second strip;
and
a compression molded segment seal portion fusing said first profile strip, said
10 second profile strip and said ribs of said first profile strip and said second profile
strip.
2. The reclosable fastener profile assembly of claim 1 wherein said rib of said first
strip and said ribs of said second strip may be sealingly engaged to maintain an
15 airtight seal when so engaged.
3. The reclosable fastener profile assembly of claim 1, wherein said compression
molded segment seal comprises a fused section of said first profile strip and said
second profile strip formed through the application of heat and pressure.

4. The reclosable fastener profile assembly of claim 1, wherein said compression molded segment seal includes a severed portion of said first profile strip and said second profile strip thereby cutting said fastener profile and creating an individual profile fastener assembly.

5

5. The reclosable fastener profile assembly of claim 1, wherein said continuous supply of first profile strips, said continuous supply of second profile strips and a plurality of said compression molded segment seal create a continuous linear supply of profile fastener assemblies.

10

6. The reclosable fastener profile assembly of claim 1, wherein said first profile strip and said second profile strip are configured to fittingly mate together such that said first profile strip is flush with said second profile strip when said first profile strip and said second profile are engaged.

15

7. The reclosable fastener profile assembly of claim 1, wherein said ribs of said first and second strips have respective head portions and neck portions, wherein said head portions are arcuate in profile.

8. The reclosable fastener profile assembly of claim 1, wherein said first strip includes a first end and a second end, said second strip further including a first end and second end, wherein respective first ends and respective second ends of said first and second strips are created through application of said compression molded segment seal.
- 5
9. The reclosable fastener profile assembly of claim 1, wherein said ribs of said first and second strips have respective head portions and neck portions, and wherein said head portions are wider than said neck portions.
- 10
10. The reclosable fastener profile assembly of claim 1, wherein said second strip includes one more rib than said first strip.
11. The reclosable fastener profile assembly of claim 1, further including means for forwarding said continuous supply of first profile strip and said continuous supply of second profile strip.
- 15
12. The reclosable fastener profile assembly of claim 1, wherein said ribs of said first and second strips have respective head portions and neck portions, and wherein said heads portions are arcuate in profile.
- 20

13. A method of forming a fastener profile for use in the production of reclosable packages, said method comprising the acts of:

providing an interconnected first profile strip and second profile strip, said interconnected profiles having an end portion; and

- 5 applying heat and pressure to said end portion of said interconnected first and second profile strip thereby fusing said end of said interconnected profiles.

14. The method of forming a fastener profile of claim 13, wherein said method comprising the additional acts of:

- 10 advancing said interconnected first profile strip and second profile strip; and

- applying heat and pressure to a second portion of said interconnected first and second profile strips thereby defining a length of reclosable fastener profile between said first end and said second portion, said second portion also defining
15 the first end of a subsequent fastener profile.

15. The method of forming a fastener profile of claim 14, wherein said method comprising the additional act of:

- cutting said second portion of said interconnected first and second profile
20 strips thereby defining a single reclosable fastener profile.

16. A method of forming a continuous strip of fastener profiles for use in the production of reclosable packages, said method comprising the acts of:

providing a continuous strip of interconnected first and second profile strips, and

5 applying heat and pressure to a portion of said interconnected first and second profile strips at predetermined intervals, thereby fusing said portion of said profiles.

17. The method of forming a continuous strip of fastener profiles of claim 16,
10 wherein said method comprising the additional act of:

cutting said fused portion of said continuous strip of said first and second profiles thereby defining an individual reclosable fastener profile from said continuous strip of fastener profiles.

18. A reclosable storage bag comprising:

a first bag wall;

a second bag wall;

a reclosable fastener profile assembly, said assembly comprising:

5 a first profile strip including at least one rib that extends from the surface of said first strip;

a second profile strip opposite said first strip said strip including at least two ribs that extend from the surface of said second strip; and

10 a compression molded segment seal portion fusing said first profile strip, said second profile strip and said ribs of said first profile strip and said second profile strip, wherein said first profile strip and said profile second strip are heat sealed to said first bag wall and said second bag wall, respectively.

15 19. The reclosable fastener profile assembly of claim 1, wherein said profile assembly further includes:

a first bag wall; and

a second bag wall where edges of said first and second bag walls are sealed together thereby defining an inner bag.

20

20. The reclosable storage bag of claim 18, wherein said first profile strip and said second profile strip may be sealingly engaged to maintain an airtight seal when so engaged.

21. A method of forming a reclosable storage bag, said method comprising the acts of:

providing an interconnected first profile strip and second profile strip, said interconnected profiles having an end portion;

- 5 applying heat and pressure to said end portion of said interconnected first and second profile strip thereby fusing said end of said interconnected profiles;

applying heat and pressure to a second portion of said interconnected first and second profile strip thereby fusing said second portion of said interconnected profiles;

- 10 cutting said fused portions of said continuous strip of said first and second profiles thereby defining an individual reclosable fastener profile between said fused portions of said continuous strip of interconnected fastener profiles;

sealing said individual reclosable fastener profile to a first and second bag wall, thereby defining a reclosable storage bag.

ABSTRACT

A fastener profile assembly and method of forming a fastener profile assembly is provided. The assembly includes a continuous supply of two interlocking profiles which are sealed at either end with a compression molded segment seal. The compression molded segment seal is formed through the application of heat and pressure to the interlocking profiles, thereby fusing the area and forming one end of the profile. Advancement of the profiles and application of heat and pressure to a second area forms the second end of the profile assembly. Manufacture of a fastener in such a manner allows for highly automated profile production with precise, accurate registration of the fastener profile.

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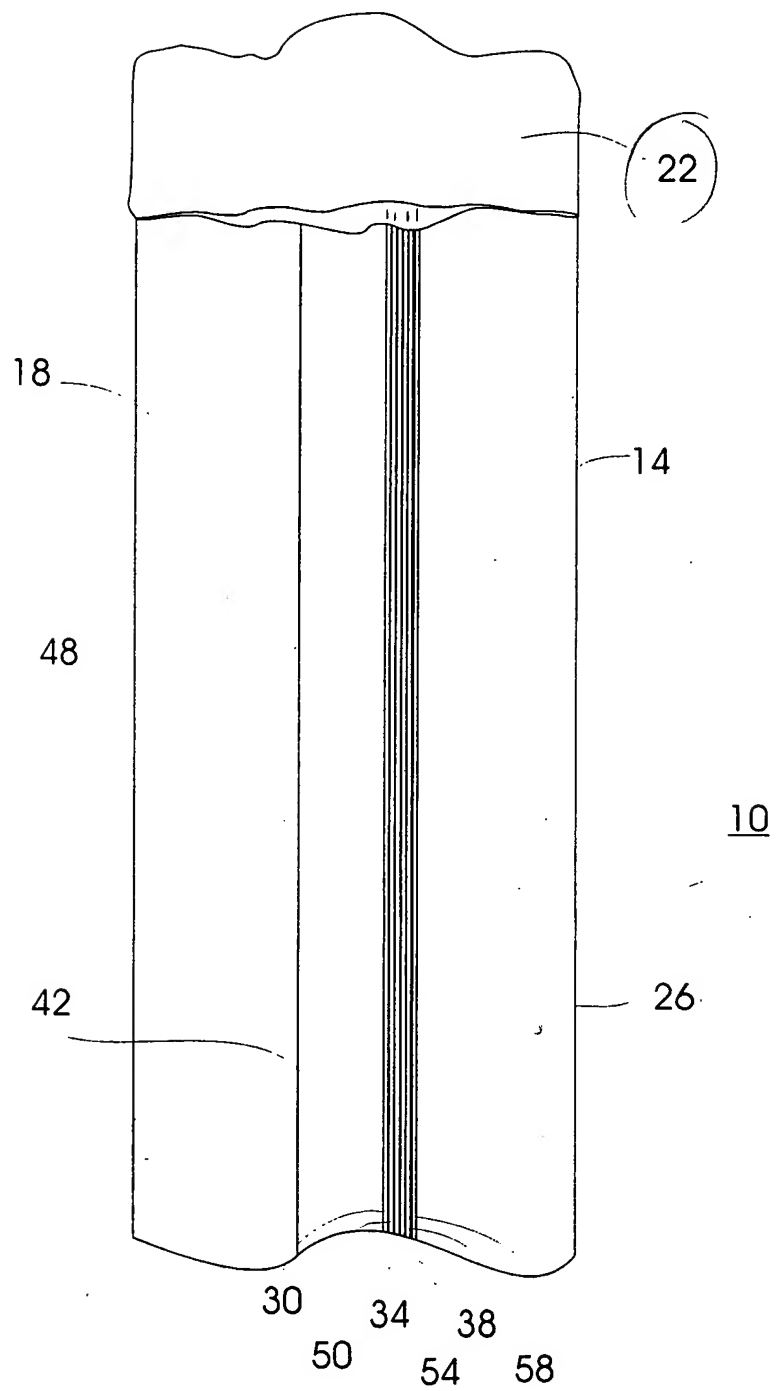


Fig. 1

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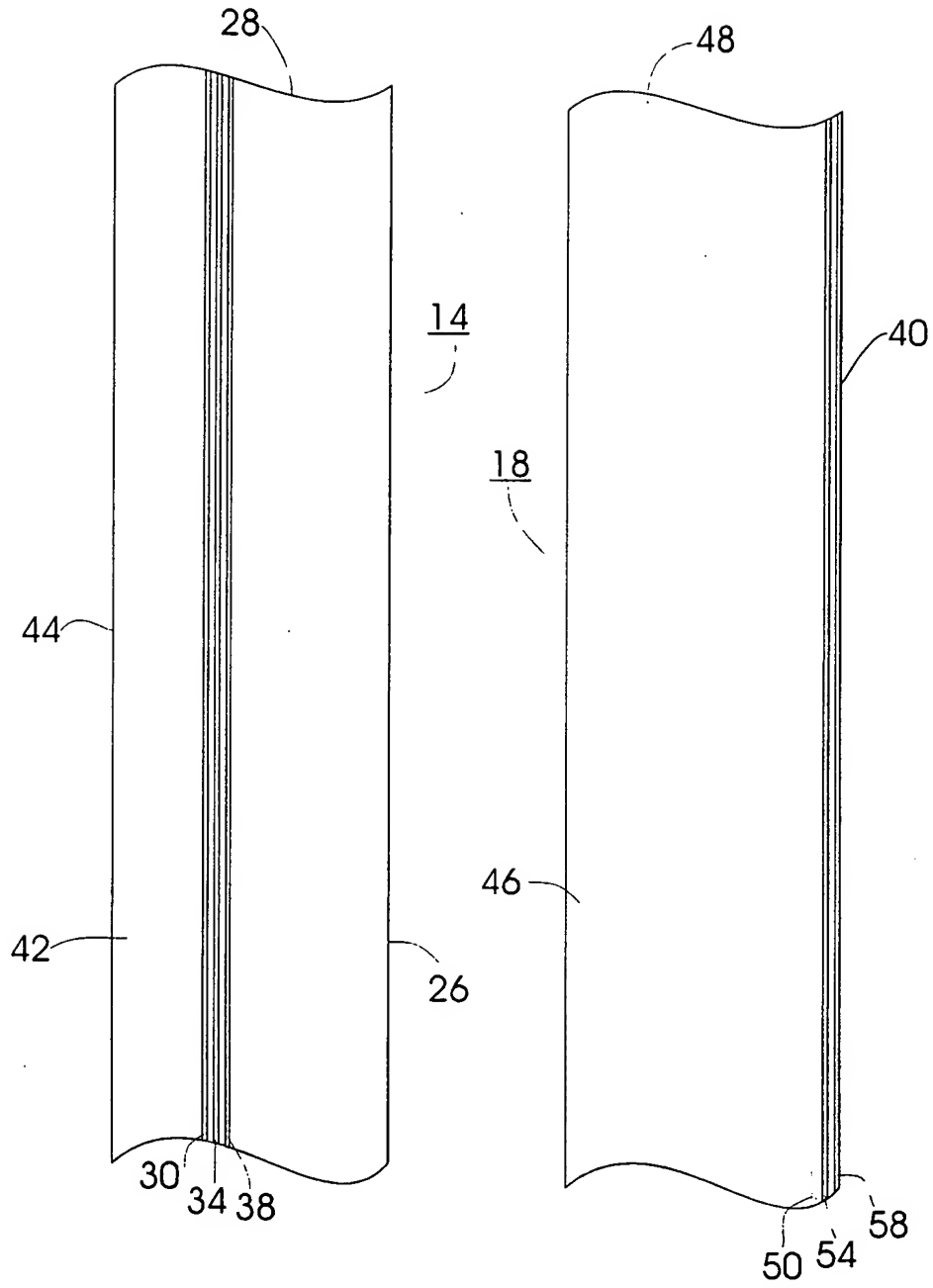


Fig. 2

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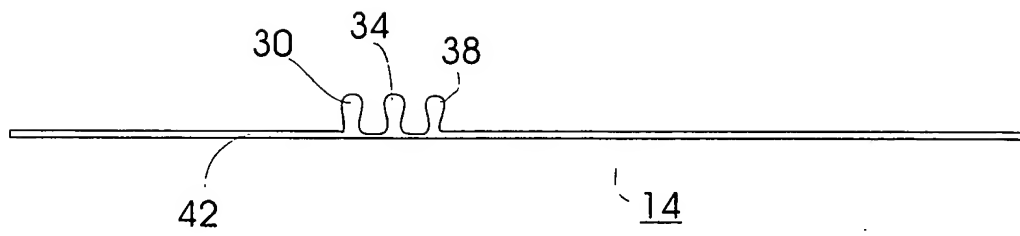


Fig. 3

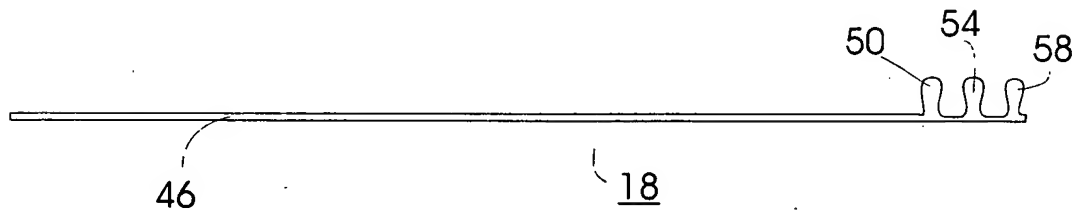


Fig. 4

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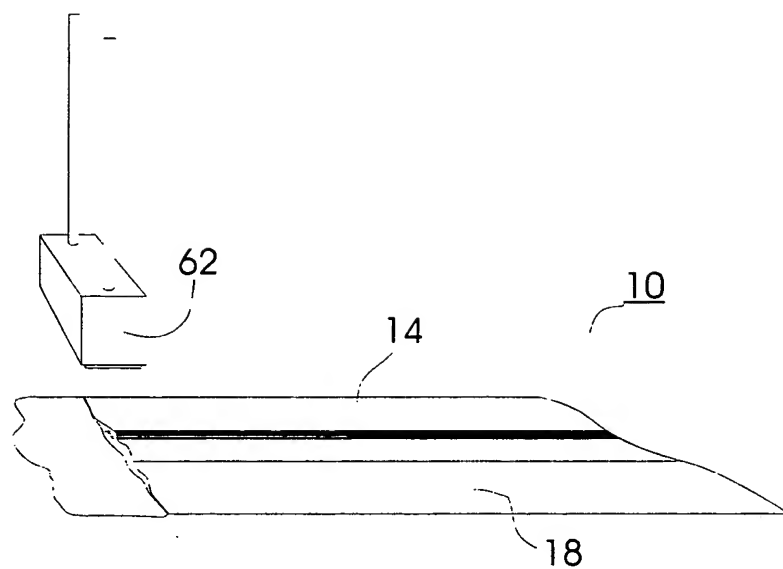


Fig. 5

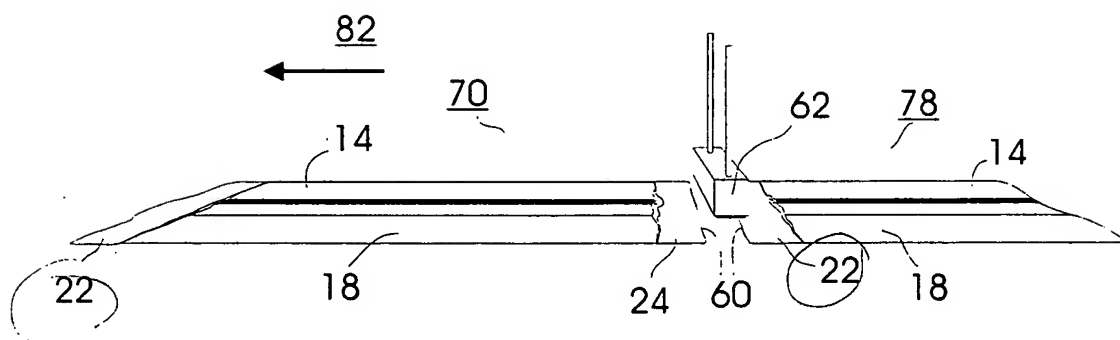


Fig. 6

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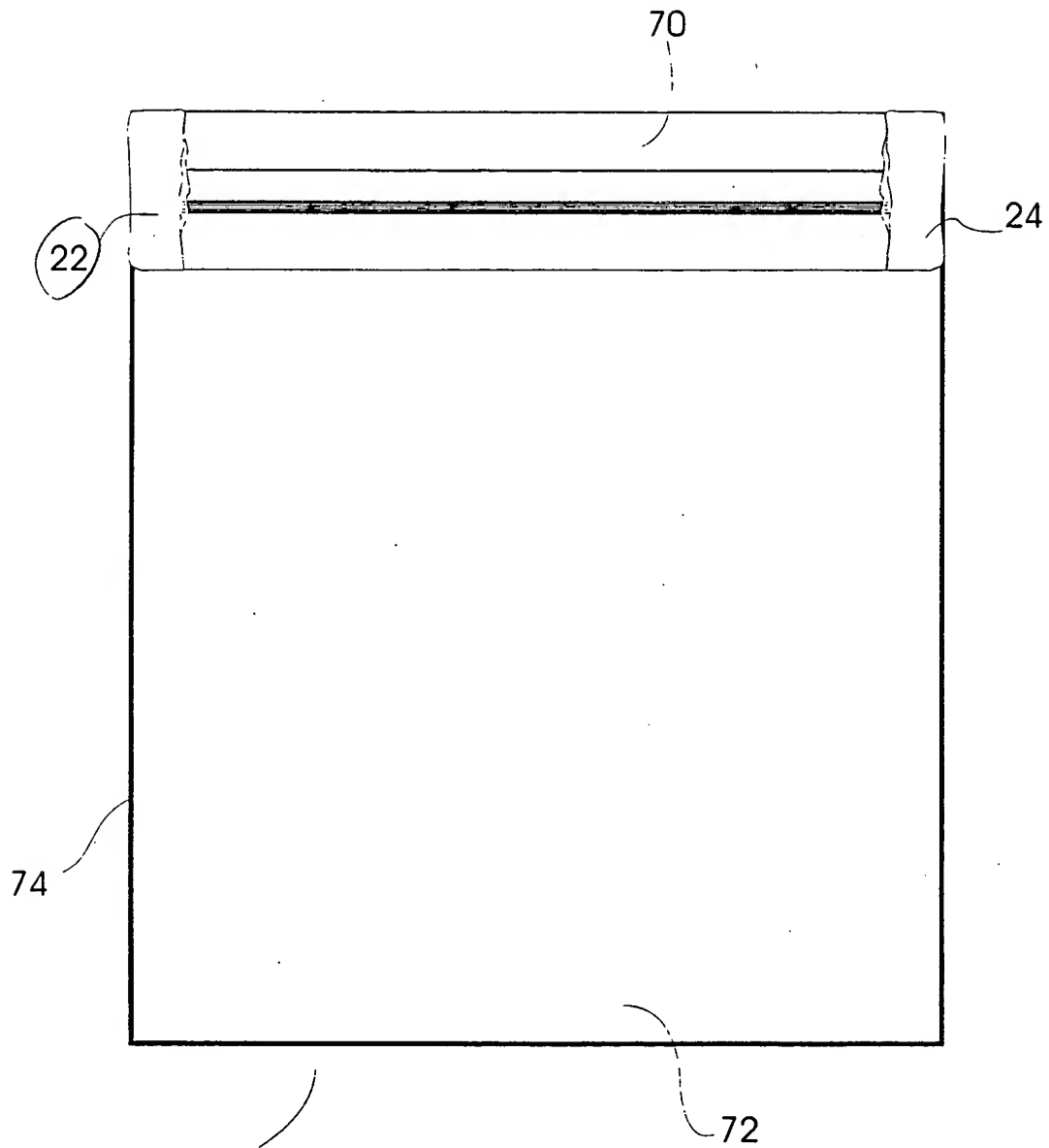


Fig. 7

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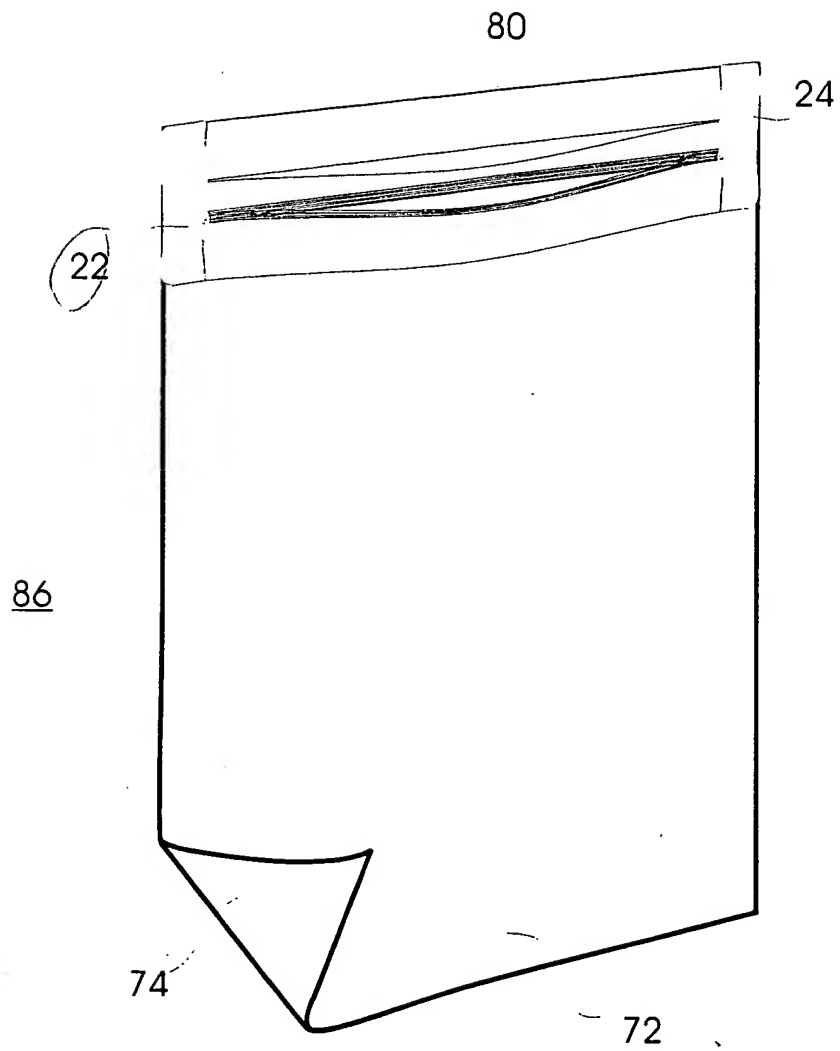


Fig. 8

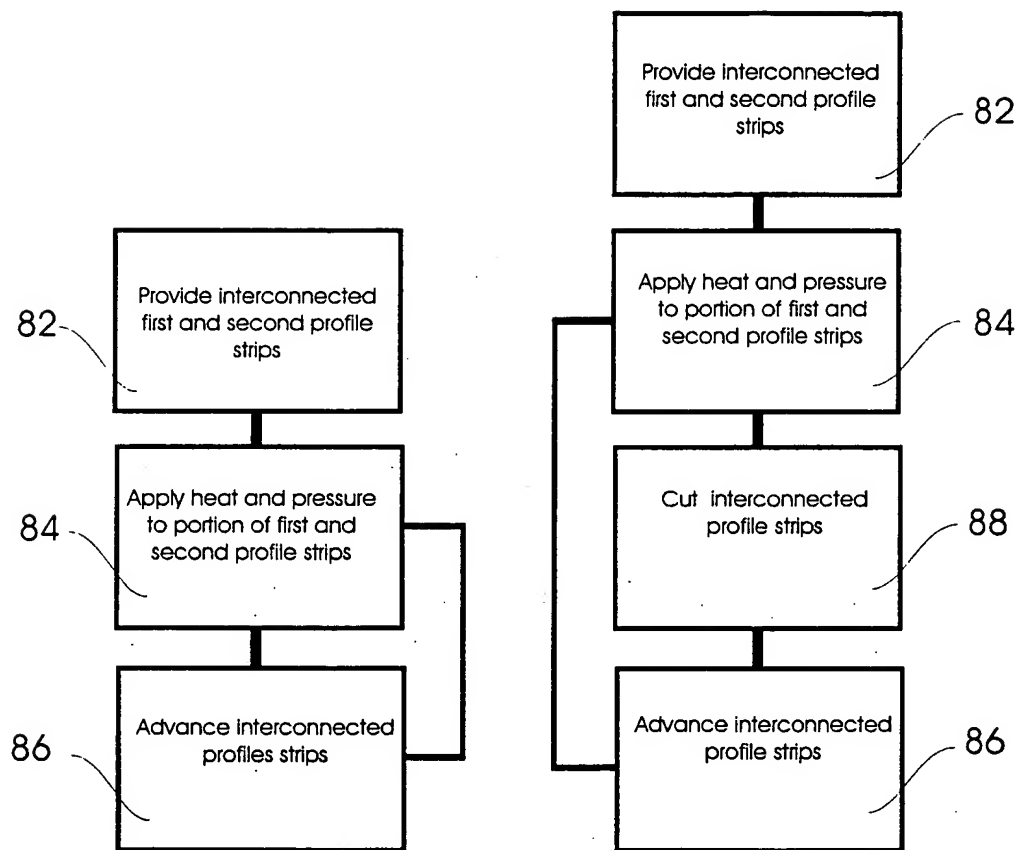
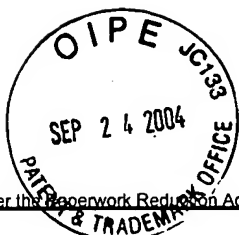


Fig. 9

Fig. 10



09-27-04 IFW/94
Op 1733\$

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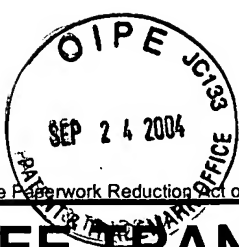
TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	10/039,527	
	Filing Date	11/7/01	
	First Named Inventor	Donald K. Wright	
	Art Unit	1733	
	Examiner Name	Piazza Corcoran; Gladys Josefina	
Total Number of Pages in This Submission	5	Attorney Docket Number	21276.01.9053

ENCLOSURES (Check all that apply)		
<input type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance communication to Group
<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
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<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information
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<input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	Robert S. Beiser (Reg. No. 28,687) VEDDER PRICE KAUFMAN & KAMMHOLZ, P.C.
Signature	<i>Robert S. Beiser</i>
Date	9/24/04

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FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT

(\$ 130.00

Complete if Known

Application Number	10/039,527
Filing Date	November 7, 2001
First Named Inventor	Donald K. Wright
Examiner Name	P. Corcoran; G. Josefina
Art Unit	1733
Attorney Docket No.	21276.01.9053

METHOD OF PAYMENT (check all that apply)☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None☒ Deposit Account:Deposit
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22-0259

Vedder, Price, Kaufman & Kammholz, P.C.

The Director is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayments☒ Charge any additional fee(s) or any underpayment of fee(s)☐ Charge fee(s) indicated below, except for the filing fee
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Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	
SUBTOTAL (1)					(\$ 0.00

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

	Extra Claims	Fee from below	Fee Paid
Total Claims	-20** =	X	0.00
Independent Claims	-3** =	X	0.00
Multiple Dependent			

Large Entity		Small Entity		Fee Description
Fee Code	Fee (\$)	Fee Code	Fee (\$)	
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent
SUBTOTAL (2)				

(\$ 0.00

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)**3. ADDITIONAL FEES**

Large Entity

Small Entity

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for <i>ex parte</i> reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	130.00
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify)

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ 130.00

SUBMITTED BY

(Complete (if applicable))

Name (Print/Type)

Robert S. Beiser

Registration No.
(Attorney/Agent)

28.687

Telephone 312-609-7848

Signature

Date

9/24/04

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